FINANCIAL TIMES

TUESDAY 23 MAY 2023

USA $2.50 Canada C$3.00

The chip industry's toxic chemicals trouble
BIG READ, PAGE 15

Why we need to build AI responsibly
SUNDAR PICHAI, PAGE 17

Fire fighting
Rivals claim Ukraine gains

Armed Forces of Ukraine/AFP via Getty Images

A block of flats ablaze in Bakhmut in an image released by Ukraine's armed forces yesterday. The Kremlin claimed to have captured the city in the Donetsk region of Ukraine over the weekend.

A group of anti-Kremlin fighters, meanwhile, stormed Russia's Belgorod region bordering Ukraine yesterday in armoured vehicles. The group, made up of Russians who have aligned themselves with Ukraine's military, claimed to be "liberating" Russian territory. The Kremlin promised to "destroy" them.

Anti-Kremlin Russian groups have previously mounted operations within Russia but this appears to be the first in which the goal is to occupy territory.

A Ukrainian intelligence official confirmed Kyiv's knowledge of the assault but did not claim direct involvement.

Message of defiance page 3
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Gideon Rachman page 17

Briefing

▸ **Profits plunge at western banks' Chinese operations**
Goldman Sachs, Morgan Stanley and other lenders have taken a hit as geopolitical tension and Covid lockdowns thwarted hopes of lucrative profits.— PAGE 6

▸ **Irish alcohol warnings**
Dublin has passed a bill that will make Ireland the first country to label alcoholic drinks with full health warnings, incensing some trading partners.— PAGE 3

▸ **Markets cheer Greek call**
Premier Kyriakos Mitsotakis has called for new elections which are expected to give him the majority he needs to govern alone. Stock prices in Athens rallied.— PAGE 2

▸ **Key backing for Erdoğan**
Nationalist powerbroker Sinan Oğan has backed Turkey's president, further cutting the opposition's hopes of ending his two decades in power.— PAGE 2

▸ **Credit Suisse staff to sue**
Bankers have contacted lawyers in a bid to sue the Swiss regulator over $400mn of canned bonuses tied to the bonds wiped out in the rescue by UBS.— PAGE 6; LEX, PAGE 18

▸ **Inflation takes toll in US**
Americans have reported that their financial health worsened sharply last year, with nearly a third saying they were "getting by" or finding it hard to.— PAGE 4

Meta handed record €1.2bn European fine over transatlantic data transfers

- Facebook owner set to appeal
- Watchdog cites privacy violations
- Activists say penalty too small

HANNAH MURPHY — SAN FRANCISCO
JAVIER ESPINOZA — BRUSSELS

Meta, the owner of social media platform Facebook, has been fined €1.2bn by the EU for privacy violations, and ordered to suspend transfers of user data to the US, in the biggest such penalty in the bloc's history.

Ireland's Data Protection Commission, the regulator responsible for EU data protection law, said Facebook had violated rules requiring safeguards for transfers of personal data from the EU to the US.

It added that changes introduced by Meta Ireland in response to a ruling in 2020 by the European Court of Justice "did not address the risks to the fundamental rights and freedoms" of such transfers — even though the transfers largely took place on the basis of contractual clauses endorsed by the European Commission. Amazon received the EU's previous record penalty for privacy violations of €746mn in 2021.

The decision comes amid pressure in Europe to push for tougher rules for data transfer to the US, with activists warning that individuals' information remains exposed to surveillance programmes.

Nick Clegg, Meta's president of global affairs, said: "We are . . . disappointed to have been singled out when using the same legal mechanism as thousands of other companies looking to provide services in Europe.

"This decision is flawed, unjustified and sets a dangerous precedent for the countless other companies transferring data between the EU and US."

The DPC has given Facebook's EU operation, based in Dublin, five months to "suspend any future transfer of personal data to the US". It has also imposed a six-month deadline for the group to stop processing any European citizen's personal information previously transferred to the US in violation of the bloc's General Data Protection Regulation.

Meta is expected to appeal against the decision, during which time a new transatlantic privacy shield might come into place.

In October 2022, US president Joe Biden signed an executive order detailing the measures the White House would take to adhere to a new EU-US data privacy framework.

Meta threatened last year to pull out of the EU if the DPC imposed a ban on data flows to the US.

The penalty is the latest in a string of fines globally for Meta over lax privacy protections, including $5bn imposed by the Federal Trade Commission in 2019 after the Cambridge Analytica scandal.

It comes as Meta, which has a $630bn market capitalisation, is battling an advertising slump amid a broader economic slowdown, prompting chief executive Mark Zuckerberg to conduct several rounds of redundancies and promise to deliver a "year of efficiency".

Social media data transfers to the US have been in limbo since the 2020 EU ruling. That ruling found that a previous EU-US privacy shield could not be relied on by companies seeking to comply with GDPR, as it did not sufficiently protect user data from US surveillance.

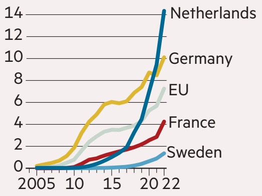
Max Schrems, a privacy activist who has regularly challenged Big Tech groups in European courts, said: "The fine could have been much higher, given that the maximum fine is more than €4bn . . . unless US surveillance laws get fixed, Meta will have to fundamentally restructure its systems."

Ireland's regulator has drawn criticism from activists for lacking the ambition to go after Big Tech.

Lex. Meta is unlikely to attract much sympathy but it does seem to be the victim of inconsistencies in cross-border policy
Page 18

Datawatch

Sun kings
% of electricity from solar



Source: OurWorldInData.org

The Netherlands produced twice as much energy from solar power last year than the average EU nation and 10 times more than Sweden, according to the BP Statistical Review. The country has made rapid progress in solar generation

Casino boss running out of luck as creditor talks loom

Wealthy investors are circling ailing French supermarket chain Casino as it prepares for talks with creditors. The retail empire built by Jean-Charles Naouri is loaded with debt and faces declining revenues and loss of market share. He is trying to preserve his controlling stake but his chances of succeeding look increasingly slim amid attention from investors including Czech billionaire Daniel Kretinsky and tech billionaire Xavier Niel.
Investors circle ▸ PAGE 9

UK groups seeking EU foothold fuel record foreign investment in Germany

GUY CHAZAN — BERLIN
CHRIS GILES — LONDON

Germany recorded its highest level of foreign direct investment last year, with a surge in UK companies setting up operations to retain a post-Brexit presence in the EU.

FDI into Germany totalled €25.3bn, up 261 per cent from €7bn in Covid-hit 2021, according to official figures from Germany Trade & Invest. The biggest sources of investment were the US, which accounted for 279 projects, Switzerland and the UK. The total of 170 FDI projects originating in the UK was up 21 per cent on 2021. "For British companies, it's particularly important to have a foothold in the EU after Brexit," said Robert Hermann, chief executive of Germany Trade & Invest (GTAI).

One of the biggest UK investments was by Frasers Group, the owner of Sports Direct, which announced in April last year that it was spending €300mn on a new distribution centre at Bitburg airport in western Germany that would become its European headquarters.

Mura Technology said it would build a chemical recycling plant in the eastern town of Böhlen that would turn 120,000 tonnes a year of plastic waste into oil.

THEMPC, a branding company, set up an operations hub in Munich to produce and distribute printed goods and packaging inside the EU without customers needing to pay extra duties and taxes.

In euro terms these were dwarfed by the biggest foreign investment in Germany announced in 2022: US chipmaker Intel's plan to build a €17bn factory in the east German city of Magdeburg. Sweden's Northvolt also announced a €4.5bn investment in a new battery factory in the northern state of Schleswig-Holstein.

The GTAI figures measure the value of announced FDI projects into Germany in 2022 with the money likely to flow only in subsequent years. According to OECD figures that measure inflows, Germany attracted $11bn of FDI in 2022, less than the UK and a quarter of the size of France and Sweden. OECD figures also show that German groups invested $142bn abroad in that year.

Many companies are still looking elsewhere, particularly the US where president Joe Biden's Inflation Reduction Act has provided $369bn of incentives for clean energy technologies. "When it comes to new decisions, the numbers are dropping," said Hermann, identifying the US act as a potential factor. "We assume it will have an effect on investment in Europe and Germany."

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World Markets

STOCK MARKETS

	May 22	Prev	%chg
S&P 500	4197.77	4191.98	0.14
Nasdaq Composite	12711.31	12657.90	0.42
Dow Jones Ind	33364.02	33426.63	-0.19
FTSEurofirst 300	1856.55	1857.19	-0.03
Euro Stoxx 50	4385.69	4395.30	-0.22
FTSE 100	7770.99	7756.87	0.18
FTSE All-Share	4234.14	4228.25	0.14
CAC 40	7478.16	7491.96	-0.18
Xetra Dax	16223.99	16275.38	-0.32
Nikkei	31086.82	30808.35	0.90
Hang Seng	19678.17	19450.57	1.17
MSCI World $	2842.76	2840.12	0.09
MSCI EM $	977.24	978.16	-0.09
MSCI ACWI $	656.42	655.94	0.07
FT Wilshire 2500	5411.43	5423.49	-0.22
FT Wilshire 5000	42184.98	42278.71	-0.22

CURRENCIES

Pair	May 22	Prev	Pair	May 22	Prev
$/€	1.080	1.079	€/$	0.926	0.927
$/£	1.242	1.244	£/$	0.805	0.804
£/€	0.870	0.867	€/£	1.150	1.153
¥/$	138.585	138.505	¥/€	149.658	149.406
¥/£	172.115	172.266	£ index	80.190	80.134
SFr/€	0.971	0.973	SFr/£	1.117	1.122

CRYPTO

	May 22	Prev	%chg
Bitcoin ($)	26885.80	26760.00	0.47
Ethereum	1817.05	1805.90	0.62

COMMODITIES

	May 22	Prev	%chg
Oil WTI $	72.01	71.69	0.45
Oil Brent $	75.92	75.58	0.45
Gold $	1961.60	1960.30	0.07

GOVERNMENT BONDS

Yield (%)	May 22	Prev	Chg
US 2 yr	4.35	4.25	0.09
US 10 yr	3.72	3.66	0.06
US 30 yr	3.97	3.92	0.05
UK 2 yr	4.05	3.94	0.11
UK 10 yr	4.20	4.14	0.06
UK 30 yr	4.41	4.37	0.04
JPN 2 yr	-0.07	-0.06	-0.01
JPN 10 yr	0.38	0.40	-0.02
JPN 30 yr	1.21	1.24	-0.02
GER 2 yr	2.79	2.76	0.03
GER 10 yr	2.46	2.43	0.03
GER 30 yr	2.63	2.60	0.03

Prices are latest for edition
Data provided by Morningstar

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Electoral reform

Greek PM paves way for second term

Fresh ballot likely to give Mitsotakis majority needed to govern alone

ELENI VARVITSIOTI — ATHENS

Greece's prime minister Kyriakos Mitsotakis yesterday called for fresh elections on June 25, which will introduce a new system expected to grant him the majority he needs to govern alone — a prospect welcomed by markets.

Mitsotakis's New Democracy party secured 40.8 per cent of Sunday's vote, double the score obtained by the radical left party Syriza, but it finished four seats short of the 150 needed for a parliamentary majority. Under the new electoral system beginning in June, the first party will be rewarded by up to 50 bonus seats, allowing Mitsotakis to form a government on his own.

"I believe there are no conditions for forming a government by the present parliament," Mitsotakis said when calling for the June 25 ballot. Mitsotakis has said he wants to avoid a coalition and hold out for a majority government. Markets welcomed the results, with the Athens stock exchange reaching its highest level in almost a decade.

Greek bonds also rallied yesterday, with the prospect of a second term probably leading to an upgrade in the country's credit rating from junk to investment grade. "Based on the first-round outcome, this significantly increases the chance of another ND government, which would suggest continuity in fiscal and economic policies, a credit-positive," said Moody's senior vice-president Steffen Dyck.

As soon as Mitsotakis declares he cannot form a coalition, the next parties in line have three days to try to form a government. Expectations are that Syriza and the third-largest party, centre-left Pasok, will be unable to do so. Once all options fail, a caretaker government is appointed and fresh elections called.

If he wins a second term, Mitsotakis is expected to continue economic reforms with a pro-business attitude and accelerate the absorption of the EU's post-pandemic recovery funds. "He speaks the language of the investment community and an outcome that delivers an ND majority government would be widely welcome," said Mujtaba Rahman, head of Eurasia Group's Europe practice. However, "there are concerns on the rule of law under his watch", he added.

The prime minister is embroiled in a spyware scandal in which Greece's intelligence service, overseen by Mitsotakis's chief of staff and nephew, spied on politicians and journalists. The government has also been accused over a decline in media pluralism while Mitsotakis has come under fire by human rights groups for illegal pushbacks of refugees at the country's borders — though his tough stance on migration is widely supported in Greece.

Last week the New York Times published a video showing border guards picking up migrants who had already landed on the Greek island of Lesbos and putting them on rafts at sea before letting them drift back towards Turkish shores. The newspaper identified the migrants and interviewed them in Turkey. The European Commission has requested this incident be investigated.

Central Europe. Agriculture

Poland's ruling party seeks to win back farmers

Price turmoil from lifting of Ukraine grain tariffs has alienated traditional heartland

RAPHAEL MINDER — SIECIECHÓW
BARBARA ERLING — WARSAW

Rural anger: Polish farmers protest in Hrubieszow last month about cheap Ukrainian grain
Jakub Porzycki/Anadolu Agency/Getty Images

After Russia launched its invasion of Ukraine, Poland backed suspending tariffs on imports from its war-torn neighbour to help get key food commodities out to the world.

But this year Warsaw reversed course, imposing a unilateral ban on some Ukrainian foodstuffs that pushed the EU into curbing grain imports from the country last month.

The reason for the about-turn: farmers such as Sławomir Wójcicki, who estimated that he had lost about 250,000 zlotys ($60,000) when he was forced to sell his grain at below production costs in order to empty silos before the next harvest. "I feel our minister lied to us about what would happen to prices," said Wójcicki, who also grows strawberries in the municipality of Garbatka-Letnisko in central Poland.

Farmers have traditionally been a cornerstone of the ruling Law and Justice party's (PiS) electorate, but they have increasingly turned against the rightwing government ahead of parliamentary elections this autumn, which look set to be closely fought. This has boosted smaller parties that promote farmers' concerns after cheaper Ukrainian grain flooded the local market, driving many into losses. Some blockaded roads with tractors in protest against what they said was a threat to their livelihoods. PiS is now seeking to win back their support.

But Wójcicki still has concerns. "I'm worried about what will happen next with the fruit harvest and Ukrainian strawberries," he said.

The grain glut formed after the EU lifted tariffs on Ukrainian grain last year in a bid to facilitate Kyiv's access to global markets via Poland and other land routes. That followed Russia blockading Ukraine's Black Sea ports as part of its attack.

Poland, one of the main proponents of removing tariffs, faced a stiff backlash from its farmers and then imposed its own ban, a rare move against Ukraine by one of its staunchest EU allies.

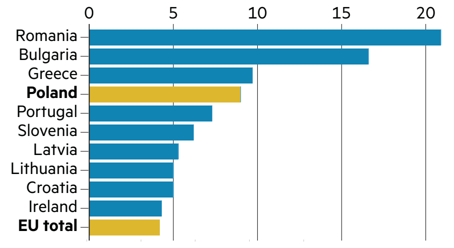
In late April, Poland and three other EU states lifted their unilateral bans after reaching a deal with Brussels to allow Ukrainian cereal imports to enter the bloc only if they were guaranteed to transit to Africa and other destinations.

Brussels also offered €100mn from EU funds to compensate farmers and agreed to a Polish-led demand to investigate the impact of Ukrainian exports of other agricultural products to see whether more curbs were needed.

But the domestic electoral consequences are still to play out. "Ukrainian grain has absolutely put the focus on the farming vote," said Konrad Szymański, a former European affairs minister in the PiS-led government who now works for the Polish Economic Institute.

Farming remains a significant part of the Polish economy

EU members with highest employment share in agriculture (% of total, 2020)



Source: Eurostat

"It's been very important for PiS to keep that vote," he said, noting that appealing to rural voters was a key strategy of PiS leader Jarosław Kaczyński since 2005, when his party first came to power.

PiS still retains the largest share of countryside votes, according to the latest opinion polls. But in a tight election race, the fragmentation of the rural electorate could also undermine the party's ability to steer post-election coalition negotiations.

One possible beneficiary is the rightwing Konfederacja party. Its agenda combines traditional family values with an economic liberalism that has become more aligned with a countryside that "has changed so much that some farmers have become entrepreneurs managing huge farms", said Ewa Marciniak, a political-science professor.

The AGROunia farming association that organised recent protests is campaigning as a new party. AGROunia's leader, Michał Kołodziejczak, said the grain crisis showed that farmers needed a direct say in politics.

"PiS are false defenders of the Polish countryside," Kołodziejczak said. "I hope farmers will see they need real representatives in the Sejm," the lower house of parliament.

> 'I'm worried about what will happen next with the fruit harvest and Ukrainian strawberries'
>
> Sławomir Wójcicki, farmer, below

But Marciniak expects newcomers to make limited gains in the election, given that PiS is responding to farmers' demands. Last month, the government also replaced its unpopular agriculture minister, Henryk Kowalczyk, who resigned after being pelted with eggs by farmers. Two weeks later Prime Minister Mateusz Morawiecki announced a new aid package worth 10bn zlotys that combines subsidies with tax rebates and that he called "the biggest aid for farmers on record".

In the village of Sieciechów, PiS mayor Arkadiusz Guba, also a farmer, has also borne the brunt of public anger. "People might not remember 100 past successes but they will remember one failure," Guba said. "The big corporate [trading] intermediaries, most of them Polish, are the only winners [in the grain crisis]."

Some politicians in the ruling coalition now acknowledge Poland mishandled the lifting of tariffs. Marcin Gryn, deputy leader of the Polish association of grain producers, said many farmers had lost faith in PiS but did not know who else to support. "We as farmers have no one to vote for because we know that it would not be better under another government."

Presidential poll

Turkish nationalist urges support for Erdoğan in run-off vote

ADAM SAMSON — ANKARA

The nationalist powerbroker in Turkey's presidential election has thrown his support behind Recep Tayyip Erdoğan, in a significant endorsement that further reduces the opposition's chance of ending the president's two decades in power.

Sinan Oğan, who came third in the elections on May 14, made the announcement at a press conference yesterday, just six days before Erdoğan goes head to head against opposition leader Kemal Kılıçdaroğlu in the second-round vote.

Erdoğan, who has led Turkey since 2003, was already heading into this Sunday's run-off with strong momentum after he clinched 49.5 per cent of the vote in the first round, beating Kılıçdaroğlu by almost 5 percentage points. Oğan scored slightly more than 5 per cent of the vote. "I demand the voters who voted for us support Recep Tayyip Erdoğan," Oğan said.

His strong backing for Erdoğan marks a fresh blow for Kılıçdaroğlu's six-party opposition alliance, which has deployed much stronger nationalist language since the first-round vote.

Following Oğan's announcement, Kılıçdaroğlu said. "It is clear who is on the side of this beautiful homeland and who is on the side of the one who betrays this beautiful homeland!"

Oğan, who quit the Nationalist Movement party (MHP) to run for the presidency, performed better than polls had suggested in the vote.

His former party, a coalition partner of Erdoğan's Justice and Development party (AKP), also won more seats than had been forecast in the parliamentary race. The AKP and MHP will together maintain their majority in the legislative branch.

Oğan said one reason he was backing Erdoğan, whose AKP has been in power since 2002, was because he worried about stability if one coalition controlled parliament and another the executive. "[Kılıçdaroğlu's] alliance has not been successful enough against [Erdoğan's] alliance for 20 years [and] could not offer a convincing perspective for the future. Above all, it failed to secure a parliamentary majority for stability," he said.

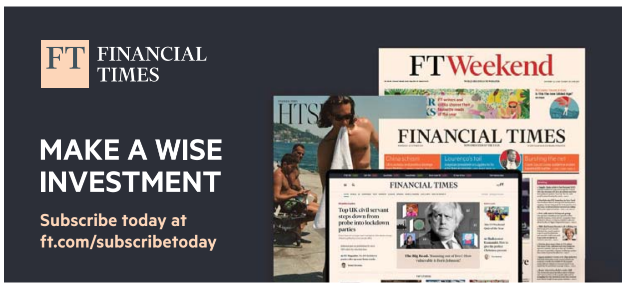
Meanwhile, German prosecutors have charged four people with the unauthorised sale of espionage software to the Turkish security services, alleging it was used in an attempt to spy on the country's opposition.

The charges, which were filed at a regional court in Munich, allege that the former employees of a defunct company called FinFisher deliberately broke German export rules, routing sales through a Bulgarian company to sidestep the permits required to sell surveillance software outside the EU.

The FinSpy software allegedly ended up in the hands of the Turkish security services, which prosecutors say targeted activists in 2017, using fake websites supposedly linked to Kılıçdaroğlu.

German prosecutors said FinSpy had been "downloaded and deployed in Turkey on previously provided hardware, followed by training on its use".

The deal between FinFisher and the Turkish government was worth roughly €5mn, according to the prosecutors.



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Caucasus

Georgians protest at resumption of air links with Russia

NADIA BEARD — TBILISI

The Georgian government's positive reaction to Russia resuming commercial flights between the nations has reignited its opponents' fears about the Caucasus country drifting back into Moscow's orbit.

Georgian ministers have welcomed the resumption of flights and cast it as an economic opportunity, in what appears to be the latest move in a tug of war between Russia and the west over Georgia's geopolitical inclinations.

The arrival yesterday of the first commercial flight from Russia in four years sparked small protests in Tbilisi, the capital, and brought together the otherwise fragmented opposition, two months after larger anti-government protests turned violent.

The ruling Georgian Dream party, widely considered to be controlled by its founding oligarch, Bidzina Ivanishvili, has pursued a policy of strategic ambiguity since its election in 2020, ostensibly courting the US and EU while publicly denouncing the west and directing policy aligned with Moscow's interests.

The majority of the Georgian population and President Salome Zourabichvili remain staunchly pro-European and are unequivocal in their opposition to Russia's full-scale invasion of Ukraine.

Zourabichvili described the resumption of flights as "another Russian provocation", adding it was "unacceptable as long as Russia continues its aggression on Ukraine and occupies our territory".

Two Georgian regions, Abkhazia and South Ossetia, have been occupied by Russian troops following a brief war in 2008. Moscow has recognised their self-proclaimed independence.

"We do not need gifts from Russia, masked as some kind of concession," Zourabichvili said in an address.

Russian president Vladimir Putin's decision to implement the flight ban in 2019 was a punitive measure after protests against a Russian MP taking a seat in Georgia's parliament as part of an assembly of lawmakers from Orthodox Christian countries in Tbilisi. In addition to resuming flights, Moscow last week also announced it was allowing Georgians to visit Russia visa-free.

The EU said the resumption of direct flights called into question Georgia's commitment to align with the bloc's policies, as a country that has applied for membership. Georgia's alignment with EU foreign and security policy decisions and declarations had gone down to 31 per cent this year, said EU foreign and security affairs spokesperson Peter Stano. "This raises our concerns."

Unlike Ukraine and Moldova, which were granted candidate status last year, Georgia has to fulfil a series of reforms before achieving that status. But more than 80 per cent of Georgians are in favour of EU integration, polls suggest.

The US state department said companies at Georgian airports could be at risk of sanctions if they facilitated Russian airlines currently under international sanctions. Georgia's deputy economy minister, Mariam Kvrivishvili, said that only Russian airlines not subject to sanctions would be able to operate direct flights to Georgia.

Not wanted: a demonstration in Tbilisi against flights from Russia

Georgia's civil aviation agency this week authorised Azimuth Airways, an airline under Ukrainian but not international sanctions and which operates flights to Russia-annexed Crimea. The agency also authorised Georgia's national airline, Georgian Airways, for direct flights to and from Russia.

Georgian Dream encouraged citizens to consider the Kremlin's decision through "a humanitarian prism", easing travel for Georgians living in Russia. The government is also spinning it as a boon to Georgia's tourism sector.

Few Georgians are likely to be convinced by those assurances. With Georgian Dream's turn towards Russia coinciding with an increasingly authoritarian approach, few doubt that Putin's decision is a reflection of tightening relations between the two governments and a reward for the Georgian ruling party's stance on the war in Ukraine.

INTERNATIONAL

Russian frontline fortifications send message of defiance to Ukraine army

Multi-layered defences will slow, but not stop, effort to recapture territory, according to experts

*These regions and Crimea are not recognised by the international community, Crimea was annexed by Russia in 2014
Source: Institute for the Study of War, AEI's Critical Threats Project, FT research • Updated May 22

CHRISTOPHER MILLER — KYIV

Ukraine's months-long preparation for its next counteroffensive to try to wrest back occupied territory has allowed Russia to fortify its positions along the almost 1,000km front line.

Satellite images reviewed by the Financial Times and military experts reveal a multi-layered network of anti-tank ditches, trenches, concrete "dragon's teeth" barricades, steel "hedgehog" obstacles, razor wire and minefields.

"Russian forces really seemed to realise . . . that a lot of the terrain they had control over was going to be difficult to defend without entrenched positions," said Brady Africk, an open-source intelligence researcher and analyst at the American Enterprise Institute who is tracking Russia's defensive build-up.

Russia began digging in "in earnest" in November and when its troops took new territory they worked quickly to entrench themselves, he said, adding that Russian forces had "ramped up" work on their fortifications recently.

"There was a brief lull in winter, likely due to [the] ground freezing and it becoming more difficult to dig," Africk said. "But since the ground has softened, we've seen the digging of fortifications escalate dramatically."

Military analysts said these fortifications would not stop Ukraine advancing, but were likely to slow the offensive.

The stakes for Ukraine are high. A successful operation could give it significant momentum as it tries to drive out Russian troops, convince western partners to continue military support, and give Kyiv leverage in any future negotiations with Moscow. It would also help keep morale high among Ukraine's defiant but fatigued population.

There is also much at stake for Russia. If Ukraine can take back control of the provinces of Donetsk, Luhansk, Kherson and Zaporizhzhia — which Russian president Vladimir Putin claimed to have annexed last September — or of the Crimean peninsula, which the Kremlin seized in March 2014, it could deal a significant blow to a military already showing signs of exhaustion and infighting.

Early signs of Ukraine's counteroffensive can be seen in "shaping operations" — common tactics used ahead of a large-scale attack. Over the past two weeks, Ukraine's forces have carried out missile strikes and sabotage on Russian command and control centres, weapons depots and artillery systems.

Drone attacks and explosions targeting military facilities in Russia, and even the Kremlin, also suggest Ukrainian involvement, say analysts, despite Kyiv's denials. Before Moscow claimed to have captured the eastern city of Bakhmut this weekend, Ukrainian troops had attacked Russian forces on their northern and southern flanks, recapturing a few square kilometres — their first gains in the area in months.

But observers are yet to see a massive thrust like the Ukrainian counteroffensive last autumn, when its forces swept through the north-eastern Kharkiv region and recaptured the southern city of Kherson.

Breaking through Russia's multi-layered defences without taking heavy losses would be extremely difficult, said Mykola Bielieskov, a research fellow at the Kyiv-based National Institute for Strategic Studies.

"On their own, obstacles don't stop advancing forces," he said. "They will only [be effective] if manned properly and complemented with artillery fire, aviation and manoeuvre of reserves."

Rob Lee, a senior fellow at the Foreign Policy Research Institute, a US think-tank, said Russia's fortifications were designed to funnel Ukrainian troops towards areas where they would come under intense fire.

"If you have multiple lines of defence, even if Ukraine punches through the first one successfully, then Russia should have enough time to reinforce a second or third," he said.

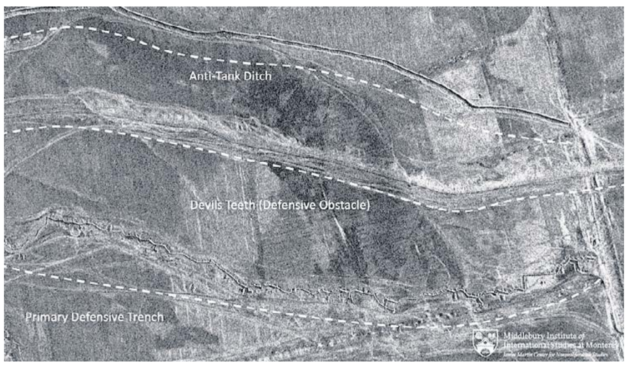
Artillery attack: Ukrainian soldiers fire a howitzer on the front line near Bakhmut last month. Below, a satellite image shows Russian trenches in the Zaporizhzhia region — Roman Chop/AP; Reuters/Capella Space

The south is likely to be the main focus for Ukrainian forces — something not lost on Moscow even as Ukrainian president Volodymyr Zelenskyy and his military leaders have kept plans a closely guarded secret, experts say.

"Around November and certainly continuing into the new year, [Russian forces] ramped up construction, particularly in southern Ukraine," Africk said. "The topography there is a lot flatter and there are wide open fields. It became a priority for Russian forces to make sure they had defensive lines [there]."

Satellite images show Russia's most heavily fortified section of the front line is in the southern Zaporizhzhia province, where Ukraine is expected to try to break through and sever the "land bridge" connecting Russian territory with occupied Crimea. The connection is crucial for Russian military logistics and supplies.

Russia has built an elaborate maze of anti-tank ditches, trenches, concrete and steel obstacles, razor wire and minefields in the area. The Berdyansk airfield near the Sea of Azov, a hub for Russian military aircraft, has been surrounded by deep trenches and three lines of concrete "dragon's teeth".



> 'We will always be able to find areas where they don't expect us'
> Andriy Zagorodnyuk, Ukrainian Centre for Defence Strategies

Melitopol and Berdyansk were "obvious" locations for Russian fortifications, Lee said. If Ukraine took either, it would gain significant ground and enable its forces to carry out onward campaigns more effectively, he added.

The northern border of Crimea has also been heavily fortified. The defences stretch from Armyansk in the north to Dzhankoi in the north-west. Both are crucial transport hubs and gateways to the peninsula. Dzhankoi also hosts a Russian military airfield.

Ukraine is likely to utilise the size of the battlefield to try to catch its enemy off guard. Despite Russia's extensive defences, the sheer length of the front line meant the Kremlin's forces would be stretched, experts said.

"The length of the front line works to our advantage," said Andriy Zagorodnyuk, chair of the Ukrainian Centre for Defence Strategies and a former defence minister of Ukraine. "[Russian troops] are scattered around this front line and we will always be able to find areas where they don't expect us."

Dara Massicot, a senior policy researcher at the Rand Corporation, a US think-tank, said Russia's performance would depend on several factors, including whether its front line was manned by "exhausted or maltreated, inadequately trained personnel".

Lee said other factors included whether Russia had exhausted its munitions trying to capture Bakhmut — the longest and bloodiest battle of the past year — and whether its newly mobilised forces were ready for the coming fight.

"They don't necessarily have that much combat experience. A lot of them have been just holding trenches," he said. "Will they stay in the fight, or will they run?"

See The FT View
Gideon Rachman see Opinion

Conflict

Anti-Kremlin fighters claim liberation of land near border

POLINA IVANOVA — BERLIN
CHRISTOPHER MILLER — KYIV
ANASTASIA STOGNEI — RIGA

A group of anti-Kremlin fighters stormed Russia's Belgorod region bordering Ukraine yesterday, moving along a main road in armoured vehicles as Russian forces rushed to respond.

The sabotage group, made up of Russians who have aligned themselves with Ukraine's military, claimed to be "liberating" Russian territory. The Kremlin promised to "destroy" the group, and videos shared by Belgorod residents showed attack helicopters flying over houses in the area.

While the anti-Kremlin Russian groups have previously mounted operations within Russia, this appears to be the first in which the goal is to occupy territory. A Ukrainian military intelligence official confirmed his government's knowledge of the operation but stopped short of claiming direct involvement.

The fighters in the videos appear to be from two Ukraine-based groups who oppose the Kremlin's war in Ukraine: the Russian Volunteer Corps and the Free Russia Legion. Both have claimed responsibility for yesterday's attack inside their native country.

Free Russia Legion posted on its channel on the Telegram messaging app that it had "completely liberated" a tiny border settlement called Kozinka just inside Russia, and was moving inwards towards Graivoron, a settlement 60km from the regional centre. "Russia will be free!" it declared.

"We are Russians just like you. We are people just like you. We want our children to grow up in peace and be free people, so that they can travel, study and just be happy in a free country," a fighter of the Free Russian Legion said in a video message.

The governor of Russia's Belgorod region, Vyacheslav Gladkov, acknowledged the incursion. In a post on Telegram he said two people from a local village had been injured by shelling.

Kremlin spokesman Dmitry Peskov said that work was "under way to squeeze Ukrainian saboteurs from Russian territory and to destroy this sabotage group".

Putin had been informed of the incursion, Peskov added. He said that the goal of the operation was to "divert attention" from Bakhmut, referring to a claim by Russia on Sunday that its forces had captured the eastern Ukraine city. Kyiv insists that the battle for the town is "not over".

Andriy Yusov, a spokesperson for Ukraine's military intelligence department, told Ukrainian state media that Kyiv was aware of an operation being carried out by Russian citizens in order to create a "security zone" to protect Ukrainians near the border and to occupy territory there.

The Russian Volunteer Corps is headed by Russian far-right extremist and former mixed martial arts fighter Denis Nikitin and is composed of other Russians opposed to the Putin regime.

Nikitin, who ran a white nationalist clothing company before the invasion, did not respond to requests for comment yesterday. But he posted several videos to the group's Telegram channel that appeared to show armed members of the group on Russian territory in the Belgorod area.

Health risks

Irish alcohol warning law provokes backlash

JUDE WEBBER — DUBLIN
AMY KAZMIN — ROME

Ireland says it will become the first country to label alcoholic drinks with comprehensive health warnings in a move that has incensed some of its trading partners and set up a clash at the World Trade Organization.

The new legislation, signed into law by health minister Stephen Donnelly yesterday, will take effect in three years to give producers time to add the detailed warnings about calorie content, grammes of alcohol and the risk of cancer, liver disease and drinking while pregnant to drinks' labels.

"I welcome that we are the first country in the world to take this step and introduce comprehensive health labelling of alcohol products," Donnelly said. "I look forward to other countries following our example."

Other countries include partial warnings, for example on drinking while pregnant, or alcohol's link to cancer, but Ireland says none provides such wide-ranging information about the risks on the label.

The warnings will only be included on products on sale in Ireland, not exports of Irish whiskey, Guinness or other alcoholic drinks. Donnelly told RTÉ radio one in 20 deaths in Ireland is linked to alcohol and even low levels of alcohol consumption are associated with cancer risks.

> 'This is an example of zealotry rather than evidence-based legislation'
> Cormac Healy, Drinks Ireland

However, more than 10 countries, including the UK, US, New Zealand, Australia, Mexico and Cuba have already lodged complaints with the WTO and the move will be discussed at its next technical barriers to trade committee on June 21.

Thirteen EU member states including Italy, France and Spain have raised concerns with the European Commission and lobby groups have called for Brussels to open infringement proceedings against Dublin for breaching EU law. The EU argues Ireland's unilateral labelling flouts a planned harmonised EU-wide approach and could distort trade.

The country, which this month celebrated the 50th anniversary of its membership of the bloc, has also faced criticism at home. "Unfortunately this is an example of zealotry rather than evidence-based legislation," said Cormac Healy, director of trade body Drinks Ireland. The Irish government "cannot afford to be hypocritical as we have been significant beneficiaries of the [EU] single market", he added, predicting the law would harm the reputation of Ireland's drinks products and raise costs.

Albiera Antinori, president of Marchesi Antinori, one of Italy's biggest winemakers, said it made a mockery of the idea of the EU as a single market.

Irish alcohol consumption peaked at more than 14 litres of pure alcohol per capita in 2001, but is now 10.2 litres.

Retirement scheme

EU to halve payouts from MEP pension fund

ANDY BOUNDS — BRUSSELS

The European parliament is proposing to halve payouts from a gold-plated pension scheme used by almost a thousand former and current members, including Brexiter Nigel Farage and Marine Le Pen, the French far-right leader.

Senior MEPs yesterday opted to reduce a €310mn deficit by increasing retirement age from 65 to 67 and ending the automatic uprating of benefits with inflation. The measures — which still have to be adopted formally — should shrink the deficit to €86mn.

The special voluntary scheme for European parliamentarians provides beneficiaries with a pension pot worth about €375,000 per person on average. Members such as Farage, UK Northern Ireland secretary Chris Heaton-Harris and Josep Borrell, the EU's foreign policy chief, will have their benefits slashed.

They will also be offered the chance to withdraw voluntarily from the pension scheme in return for a one-off payment.

The fund pays out about €20mn a year with the average pension more than €2,000 a month, which can go up to €7,000 a month. For many members, these payments come on top of a pension provided by national governments.

As of December 31, the fund's assets were between €50mn and €55mn. Future pension payment obligations totalled €363mn until at least 2074 and the fund was forecast to run out of money in late 2024 or 2025. The scheme had 964 current and future pensioners in 2021.

In total the parliament paid €142mn and the MEPs €71mn into the scheme, which was closed to new members in July 2009 when a new regime for pay and pensions began. But parliament at the time said it would be liable for the future benefits of the voluntary scheme members.

Heidi Hautala, a Green member of parliament's rulemaking bureau, which took the decision, said it should go further. Her Green group did not want to see the parliament "commit itself to keeping alive an unviable fund with taxpayer money", she said. "It's a dead-end to sustain an additional voluntary pension fund for MEPs that should've been wound up years ago."

Recent court rulings by the European Court of Justice could allow the parliament to walk away from the scheme, she said.

"Letting the fund go bust should not be off the table," Hautala said. But she acknowledged that legal opinions on the parliament's liability differ and said that the matter could ultimately be adjudicated in court.

Hautala said she would ask MEPs to delete a commitment to be liable for the fund from their statutes.

The parliament said that the measures would put the legacy pension scheme "on a more sustainable path", while safeguarding taxpayers' interests and securing a "minimum level of subsistence of beneficiaries".

The situation will be reviewed next year.

INTERNATIONAL

Price pressures

High US inflation takes toll on consumers

Fed survey shows a third of adults are worse off than a year earlier

COLBY SMITH — WASHINGTON

US adults reported that their financial health had deteriorated sharply last year in the face of high inflation, new data from the Federal Reserve showed yesterday.

According to a survey published by the US central bank, the share of adults reporting that they were "doing at least OK financially" fell to 73 per cent in 2022, down 5 percentage points from the previous year and one of the lowest readings since 2016.

Nearly a third reported they were either "just getting by", or "finding it difficult to get by".

The survey, which recorded the responses of more than 11,000 people in October, found 35 per cent were worse off financially compared with a year earlier, the highest level since the question was first asked in 2014.

Fed officials said unrelenting price pressures were primarily to blame, causing consumers to either stop buying certain items or switch to cheaper alternatives, and forcing them to dip into their savings.

The worsening sentiment comes as the Fed embarks on its fastest monetary tightening campaign in decades to fight stubbornly high inflation. Last year it raised its benchmark policy rate from near-zero to nearly 4.5 per cent. Following more rate rises this year, officials are debating whether to forgo further tightening at the next policy meeting in June. A large cohort of policymakers worry that there has been only limited progress in getting inflation down, despite signs that prices have peaked.

Employers are still hiring and consumers are still spending, albeit more conservatively than last year, fuelling concern that the economy still retains too much momentum.

Complicating the outlook is uncertainty over the extent of the credit crunch, as lenders have pulled back in the wake of multiple bank failures since March. Jay Powell, the Fed chair, cited this on Friday as he hinted he might prefer to skip another rate rise at next month's meeting.

Mary Daly, president of the San Francisco Fed, said yesterday the recent credit tightening was equal to roughly one or two interest rate increases, although she said she would be watching the data closely to determine if that estimate still held.

Daly did not state a preference for what to do about rates next month, but emphasised that balancing the risks between over-tightening and under-tightening was becoming "more and more challenging".

The Fed's survey yesterday indicated that fewer people reported being able to cover an unexpected $400 expense using cash, savings or a credit card that could be immediately paid off, with only 63 per cent answering in the affirmative, compared with 68 per cent the year before. Just over 10 per cent said they would not be able to cover the expense "by any means".

Additional reporting by Joshua Franklin

Republican campaign. Nomination battle

DeSantis struggles for lift-off

Trump commands large early lead over former rising star in fight to stand against Biden

LAUREN FEDOR — WASHINGTON

Ron DeSantis is expected to file paperwork to run for president this week, ending months of speculation in which the Republican governor of Florida has steadily fallen in the opinion polls behind main rival Donald Trump.

DeSantis, 44, has long been seen as a rising star in the Republican party. His political stock spiked following last November's midterm elections, when he cruised to a second term in Florida by nearly 20 points while Republicans in other parts of the country faltered.

The firebrand governor, who gained national attention for bucking conventional wisdom during the Covid-19 pandemic and rejecting lockdowns, was touted as a credible alternative to Trump. The former president had hand-selected many of the Senate and gubernatorial candidates who failed in the midterms.

But more than six months later, Trump, 76, is the undisputed frontrunner in an increasingly crowded field of Republicans hoping to take on Joe Biden for the White House in 2024. Trump's standing in the polls has only grown in recent weeks, as Republican grassroots voters have rallied around him despite his mounting legal woes.

Trump now commands the support of more than 56 per cent of the Republican electorate, according to the latest average of opinion polls compiled by Real Clear Politics. DeSantis trails in a distant second place, at just shy of 20 per cent.

Republican campaign veterans say the polls reflect an increasingly disciplined Trump campaign apparatus that relentlessly attacks DeSantis, and a "shadow campaign" by the Florida governor that has yet to get off the ground.

"After campaigning for five months, and going nowhere but down, it looks like Ron DeSanctimonious will soon be entering the race," Trump said in a post on his social media platform, Truth Social, on Friday. "He has ZERO chance, and MAGA will never forget!"

"Trump is firing on all cylinders," said Ford O'Connell, a Republican operative in Florida. "He is running circles around the DeSantis campaign."

The Florida governor held off formally entering the presidential race until after the end of his state's legislative session. He has instead engaged in sporadic public appearances to promote a new book, *The Courage to Be Free*.

Those appearances have generated mixed results. Some onlookers suggest that DeSantis needs to shorten a lengthy stump speech that rattles off his policy achievements in Florida, and spend more time on the "shaking hands and kissing babies" side of retail politics.

This is particularly true in crucial early swing states such as Iowa and New Hampshire, where voters look for a personal connection with candidates.

At the same time, DeSantis's increasingly conservative rule in Florida has cast doubt in the minds of some wealthy donors. They have publicly questioned his approach to social and cultural issues, namely his signing of a ban in the state on abortions after six weeks of pregnancy.

Thomas Peterffy, a top Republican donor and founder of the digital trading platform Interactive Brokers, told the Financial Times last month that he was putting his donations to DeSantis "on hold" in part because of the governor's stance on abortion.

Ken Griffin, founder of the hedge fund Citadel and a historic backer of DeSantis, has also reportedly been keeping his powder dry. At the same time, DeSantis has faced growing questions from fellow Republicans over whether he has gone too far in his bitter dispute with Walt Disney, after the media company filed a sweeping lawsuit against the governor and his administration.

But many donors are also standing by DeSantis, who has summoned deep-pocketed supporters to an event in Miami on Thursday and Friday. The governor is widely expected to file his official paperwork with the Federal Election Commission ahead of the donor event, but it remains unclear whether he will hold any public campaign launch in the coming days.

Dan Eberhart, a Republican donor who backed Trump in the past but is now supporting DeSantis, said he remained confident in the governor's abilities to take on Trump.

"Governor DeSantis needs to quickly demonstrate that this is a two-person race," said Eberhart, who plans to attend the event in Miami this week. "DeSantis needs to show primary voters he can deliver drama-free conservative government and help Republicans win."

People close to DeSantis suggest the governor's path to victory runs through the early voting states, rather than a focus on the national political stage.

"DeSantis has got to go for broke in Iowa. You have got to catch lightning in a bottle," said O'Connell. "Winning Iowa would allow DeSantis to take control of the narrative."

Dining out: Ron DeSantis meets staff and customers at a restaurant in Manchester, New Hampshire, on Friday after a debate nearby
John Tully/The Washington Post/Getty Images

Tim Scott
South Carolina senator announces candidacy

Tim Scott has launched his campaign for president, becoming the latest Republican in a growing list of contenders challenging Donald Trump for the party's nomination.

The 57-year-old US senator from South Carolina has long been mooted as a possible candidate. The only black Republican in the upper chamber of Congress, he formed a presidential exploratory committee last month that allowed him to raise and spend money on a potential run.

He made his bid official yesterday with a speech in North Charleston, South Carolina, that leaned heavily on his personal story of growing up in poverty, his Christian faith and his conservative political agenda. Scott faces an uphill battle if he is going to gain traction. All Republican candidates trail Trump in national polls.

Lauren Fedor

US-China relations

G7 tension and chips ban dent hopes of thaw in ties

DEMETRI SEVASTOPULO — HIROSHIMA
ELEANOR OLCOTT — HONG KONG
JOE LEAHY — BEIJING

Joe Biden's prediction of an imminent "thaw" in US-China relations was quickly followed by a reminder of how much tension still exists between Washington and Beijing.

Within hours of the US president's words at the end of a G7 summit in Japan on Sunday, China ordered a swath of its infrastructure companies to stop buying from US chipmaker Micron.

It underscored the big challenges to stabilising US-China relations at the end of a summit in Hiroshima where Biden and other leaders of the advanced economies issued their harshest criticism of Beijing — while also acknowledging the need to co-operate with China.

The summit communiqué sparked an angry response from Beijing, which summoned Japan's ambassador to China to protest. Chinese foreign policy experts said the G7 statement — which also showed the US and Japan's success in persuading European countries such as Germany and France to take a stronger stance against China — would further complicate relations.

"The G7 communiqué points the finger at China in every dimension," said Wu Xinbo, dean of the Institute of International Studies at Fudan University in Shanghai. It would "make China even less willing to co-operate with the G7 to address issues of their concern".

For months, Washington and Beijing have struggled to follow through on an accord made between Biden and President Xi Jinping at a meeting in Indonesia in November to set a "floor" under the relationship. The Chinese spy balloon detected over the US this year led Washington to cancel a visit to Beijing by secretary of state Antony Blinken.

US national security adviser Jake Sullivan insisted the G7 conclusions would not affect efforts to reschedule Blinken's trip or agree possible visits by Treasury secretary Janet Yellen and commerce secretary Gina Raimondo.

China experts in the US said while the G7's criticism of China would go down badly in Beijing, it would not derail all efforts to restart high-level engagement.

Dennis Wilder, a former CIA China analyst and White House official, said he believed Xi would still proceed with "tactical efforts" to try to achieve what was discussed with Biden. "It needs a stable international environment in which the US and its allies do not decouple their economies from China or take measures to move Taiwan toward independence," said Wilder.

One potential focus is the economy. "The Chinese appear to want to engage in an effort to stabilise US-China relations . . . partly due to concerns about the economy," said Bonnie Glaser, a China expert at the German Marshall Fund. But she said China was "cherry picking" which officials it would meet.

An early test will come this week when China's commerce minister, Wang Wentao, is due to become the first senior Chinese official to visit Washington since 2020. Wang is scheduled to meet US trade representative Katherine Tai at an Apec trade meeting in Detroit then on to Washington to meet Raimondo.

In a positive sign from China, its nationalist Global Times tabloid said that Wang's meetings showed both sides "recognised the importance of economic and trade relations". One US official said Wang's visit was "small 'm' momentum as we all find our footing".

While Wang's meetings in the US and

> 'The attempt to kill Micron will lead to much stronger and more far-reaching decoupling actions'

the possible visits to China by Yellen and Raimondo could help ease tensions over trade, experts said the faultlines in the two countries' relations were now much more focused on technology-related national security issues, economic coercion and tension over Taiwan.

A former US official warned the latest tension over Micron, which Beijing's regulator said posed security risks, would have serious ramifications for US-China ties. "The Chinese leadership should understand this action will make it impossible to stabilise relations, and the attempt to kill Micron will lead to much stronger and more far-reaching decoupling actions from the Biden administration and the US Congress."

Wu said he did not have "high expectations" of much progress, saying the 2024 US presidential election and Biden's candidacy meant politics would drive Washington's agenda on China.

Zhao Hai, dean of the National Institute for Global Strategy at the Chinese Academy of Social Sciences government think-tank, added there was a serious lack of trust. He pointed to the example of the US targeting China with export controls shortly after Biden and Xi met in Indonesia. "Even if we continue to communicate, there's no fruit, there are no results," said Zhao. "Now it's our turn to want to see results."

See The FT View and Lex

Israel

Netanyahu moves closer to passing budget

JAMES SHOTTER — JERUSALEM

Israeli prime minister Benjamin Netanyahu moved a step closer to being able to pass a state budget yesterday after striking a deal with ultra-orthodox members of his coalition who had threatened to vote against it.

Various factions within Netanyahu's religious, far-right coalition have in recent weeks raised the prospect of withholding their support if their demands for additional funding were not met. Failure to pass a budget by a May 29 deadline would trigger early elections.

Among the most outspoken have been members of the ultraorthodox United Torah Judaism party (UTJ), who said last week that they would abstain or vote against the budget unless the government committed an additional Shk600mn ($164mn) to fund the religious school system.

However, after last-ditch haggling, Netanyahu's Likud party said yesterday it had reached a deal with the UTJ under which the latter would back the two-year, Shk2tn budget in exchange for up to Shk250mn in additional educational funding.

The tussle over the funds has brought to the fore one of the main faultlines in Israeli society, underscoring deep divisions between secular Israelis and the fervently religious and rapidly growing Haredi community, whose men — unlike secular Israelis — typically do not do military service and instead devote time to studying the Torah.

Opposition politicians have denounced the government's plans to boost funding for the Haredi educational system as disincentivising Haredi men — only about half of whom work — from seeking employment. They have also taken issue with the fact private Haredi schools are not required to teach core subjects, such as English and maths.

"They are using our money to destroy our children's future," Yair Lapid, head of the largest opposition party, Yesh Atid, told Channel 12 news at the weekend. "Our children will now need to support the children who don't study core subjects."

The dispute has also spilled over into society more broadly, with several thousand protesters marching through the ultraorthodox neighbourhood of Bnei Brak last week, and one television presenter coming in for fierce criticism after branding Haredi "bloodsuckers".

Moshe Gafni, UTJ leader, denounced such language as "incitement" yesterday. "I'm not a sucker . . . I'm a citizen of Israel," he said during a debate in parliament.

The agreement between Likud and the UTJ means that the main remaining question mark over the budget is the position of the extreme-right Jewish Power party, led by national security minister Itamar Ben-Gvir.

The party last week boycotted some Knesset votes in an attempt to secure backing for its funding demands. However, despite the wrangling, Netanyahu has repeatedly insisted he is confident of passing a budget on time.

Climate summit

Amnesty hits at Assad's COP28 invitation

CAMILLA HODGSON

Human rights group Amnesty International has condemned the invitation to Syrian president Bashar al-Assad to the UN COP28 climate summit as a "sick joke", while the US and UK governments stood by the host's right to issue it.

The Syrian leader, who was invited to the COP28 conference last week by host country United Arab Emirates, has not attended a global summit since the outbreak of his country's civil war in 2011.

But Syria was readmitted to the Arab League of nations this month and Assad was welcomed at its gathering last week, as Saudi Arabia led efforts to improve relations in the region.

The US National Security Council told the Financial Times it was "up to the UAE who they invite to COP". But the US had "no plans to normalise relations" with the Assad regime, it added, without "authentic progress" on resolving the conflict in Syria.

The UK also said invitations for COP28 were "a matter for the host country" and the UN. However, the government "remains opposed to engagement with the Assad regime and we believe they must be held accountable for the human rights abuses and violations they have committed".

The UN's climate arm also said the UAE as the host was responsible for inviting heads of state and government, and noted that the UN General Assembly had "restrictions in place for two governments, Afghanistan and Myanmar".

Bashar al-Assad: Amnesty says his forces have used chemical weapons

Amnesty International said the COP28 invitation to Assad was not "remotely about tackling the climate crisis" but "part of an insidious normalisation process designed to maintain impunity for leaders across the region".

Kristyan Benedict, Amnesty International UK's crisis response manager, said: "Given that Assad's forces have used chemical weapons and flattened entire towns and cities in a murderous scorched-earth military campaign, it's a sick joke to imagine that he'll take the slightest interest in dealing with the human rights crisis of climate change."

Human Rights Watch said it was "inconceivable that a government would get away with such persistent crimes against humanity without any accountability".

The COP28 hosts have justified the invitation to Assad by saying it is committed to "an inclusive COP process".

Additional reporting by Aime Williams in Washington

GIORGIO ARMANI
MADE TO MEASURE

Bullish outlook US investor Fortress says its sale by SoftBank sets staff up to cash in on an expected wave of defaults ➔ PAGE 8

Companies & Markets

Profits sink at China-based operations of western banks

- Geopolitics and lockdowns take toll
- Hopes of lucrative activity thwarted

KAYE WIGGINS AND CHENG LENG
HONG KONG
THOMAS HALE — SHANGHAI

Profits at Goldman Sachs, Morgan Stanley and a clutch of other western banks in China fell sharply last year, as lockdowns and geopolitical tensions thwarted hopes that their operations in the country might finally start to be lucrative.

Credit Suisse, Deutsche Bank, Goldman Sachs and HSBC reported losses in their China-based units in 2022 and Morgan Stanley's profits fell, figures published by the lenders and seen by the Financial Times show.

Among a group of seven Wall Street and European groups with investment banking units in mainland China, JPMorgan and UBS were the only banks whose profits rose, though HSBC's unit lost less money than in previous years.

> 'These guys established these [units] when China was all about growth. The fact is, a lot has changed'

The western banks have spent years investing in small and often lossmaking operations in China in the hope that a foothold in the second-largest economy would eventually prove profitable. But as relations between Washington and Beijing deteriorate, the figures show how difficult that bet has become.

"These guys established these [mainland units] when China was all about growth . . . and you didn't have the geopolitics in the background", said a Hong Kong financier. "The fact is, a lot of that has changed."

The lacklustre performance marks a reversal from 2021, a record year for investment banks, when six of the seven made a profit in their mainland operations after Beijing allowed them to start taking full ownership of the units for the first time after a trade deal with the US.

The lenders cited US-China tensions, Covid restrictions, China's property crisis, reduced onshore stock trading, restructuring costs, and fierce competition for the losses and meagre returns, corporate filings show.

Progress has stalled just as banks assess how hard their businesses in China might be hit by US sanctions and greater scrutiny from Washington. The banks have also received requests from Chinese regulators to rein in executive pay and defer bonuses, in line with Xi Jinping's "common prosperity" drive.

Some have started holding back on work that might have otherwise proved lucrative in order to avoid running up against US sanctions.

"AI is the next big thing, and five years ago, we would've spent a lot of time covering Chinese AI companies," said an executive at a western investment bank in Hong Kong. "But now, no. They might end up on an entity list in the US."

The seven banks collectively accounted for 0.1 per cent of the Rmb395bn ($56bn) revenue made by 140 investment banks in China last year.

The mainland units do not represent all the money the banks are making in China because profits from some lines, including advising Chinese companies on US or Hong Kong listings, are often booked elsewhere.

New York listings of Chinese companies, once a lucrative source of fees that western banks held up as justification for their lossmaking mainland presence, have dwindled after a regulatory crackdown from Beijing and more stringent audit checks from US regulators.

HSBC said that it was "fully committed" to its mainland securities unit, which was "showing good momentum". The other banks declined to comment.

Local focus PacWest sells $2.6bn debt portfolio amid plans to target core community lending

PacWest is to offload 74 loans to property investor Kennedy Wilson — Morgan Lieberman/Bloomberg

BROOKE MASTERS — NEW YORK
OLIVER RALPH — LONDON

Californian bank PacWest has reached a deal to sell a $2.6bn portfolio of loans to real estate investment group Kennedy Wilson, just weeks after it said that it was looking at narrowing its focus to its core community banking business.

The lender said in a filing yesterday that the sale of 74 loans was "consistent with the previously announced strategy of PacWest Bancorp to pursue strategic assets sales". The deal could be expanded to include another six loans worth $363mn.

PacWest has been under pressure since Silicon Valley Bank collapsed in mid-March, prompting depositors to pull money from other midsized regional banks, and has suffered sharp stock price declines.

Its shares, which have shed three-quarters of their value since the start of the year, rose 3.8 per cent in pre-market trading.

The bank announced this month that it had designated a $2.7bn lender finance portfolio as available for sale. At that time deposits totalled $28bn, with just 25 per cent of them in accounts too large to be covered by federal deposit insurance.

Beverly Hills-based PacWest lost $5bn in deposits in the first quarter amid the broader market fears over SVB, but said in May it had not seen out-of-the-ordinary deposit flows around the late April failure and takeover of First Republic.

Under the terms of the deal, Kennedy Wilson has placed $20mn in escrow but it is refundable until the firm completes due diligence. The transaction is scheduled to close in tranches over the next few months.

Kennedy Wilson focuses on multifamily and office properties in the western US, the UK and Ireland. It is also based in Beverly Hills. Its investment management business runs $6bn in fee-bearing capital and it has purchased or originated more than $8bn in debt since 2010.

Investor Todd Boehly, who co-owns England's Chelsea Football Club and the Los Angeles Dodgers baseball team, sits on its board.

PacWest and Kennedy Wilson did not respond to emails seeking comment. Kennedy Wilson's shares rose 1.2 per cent in pre-market trading.

PacWest reported a net loss of $1.21bn in the first quarter. It also reported $860mn in unrealised losses in its securities portfolio.

It had instructed investment bank Piper Sandler to help it explore strategic options, the Financial Times reported earlier this month.

It had also shored up its access to cash in April with a $1.4bn lending facility from Apollo-backed investment group Atlas Partners.

Credit Suisse staff to sue regulator over lost bonuses

OWEN WALKER, STEPHEN MORRIS AND ROBERT SMITH — LONDON

Credit Suisse staff are preparing to sue the Swiss financial regulator over $400mn of bonuses that were cancelled after the bank's rescue by UBS.

Thousands of senior Credit Suisse bankers have a portion of their bonuses linked to the group's additional tier 1 bonds, securities that were wiped out in the takeover orchestrated by Swiss authorities in March.

Law firms Quinn Emanuel and Pallas, which are already suing the Swiss regulator Finma on behalf of investors who owned the AT1 bonds, have received multiple requests from senior managers at Credit Suisse to take legal action on their behalf too, according to several people familiar with the matter.

The development comes amid news that Credit Suisse directly disputed Finma's basis for writing down $17bn of its additional tier 1 bonds, in a private letter aimed at sparing staff bonuses that were tied to the debt.

At this point, lawyers are unclear whether claims from Credit Suisse employees could be bolted on to the existing suits filed against Finma or would need to be lodged separately, the people added.

The bonuses date to 2014 when managing director and director-level staff at the bank were offered a contingent capital award as part of their remuneration. The unconventional awards were designed to mimic AT1s, which could be converted into equity or written down to zero if the bank was in distress.

CCAs typically made up about 10 to 15 per cent of a manager's total bonus, vesting after three years. They also provided two interest payments a year. In 2021, the last year they were granted, more than 5,000 Credit Suisse staff received them.

AT1s are a type of hybrid debt instrument created after the financial crash of 2008 to give banks greater capital flexibility in the event of crises.

Credit Suisse asked Finma if the CCAs could be treated differently to AT1s, but employees were told three weeks ago that their awards would be wiped out along with the AT1s. Yesterday, Credit Suisse staff were informed they would receive the final interest payment on the CCAs before they were erased.

Credit Suisse, Finma, Quinn Emanuel and Pallas all declined to comment.

See Lex

Poorer people must not be frozen out of the banking system

INSIDE BUSINESS
FINANCE

Patrick Jenkins

There is an ongoing paradox at the heart of what has become known as Britain's cost of living crisis. With inflation still running at more than 10 per cent, Citizens Advice, which provides free guidance on debt issues and other consumer worries, said recently that it had helped a record number of more than 600,000 people in the first four months of the year, up 6 per cent on the same period of 2022.

And yet Britain's banks are reporting little evidence of their customers falling behind with payments on their borrowing. For the first quarter of the year Lloyds, the country's biggest high street lender, increased credit provisioning a little, but the tally of retail customer loans classified as impaired remained stable — at just 1.2 per cent of the total.

Profits were up nearly 50 per cent, thanks to an expanded spread between what it pays out to depositors and what it charges borrowers. Other banks reported similar trends.

The pattern is playing out elsewhere in the world. Yes, there have been some dramatic banking collapses — among US regional groups and in Switzerland.

But these lenders failed because of panicked depositor runs, lax regulation and generally bad management. They did not get into trouble for the prosaic reasons you might have predicted: higher interest rates leading to customers unable to afford their borrowing.

The dissonance is partly explained by delayed impact: it takes a while for an individual with a stretched budget to default on a credit card and for that to feed through to quarterly results.

But bankers and campaigners alike reckon there is another reason: increasing numbers of people are being frozen out of the formal banking system, so do not show up as problem borrowers.

Plend, a peer-to-peer lending platform published research recently suggesting the number of people who feel "locked out" of the financial system jumped 40 per cent last year, as banks cut back on riskier lending: more than a quarter of the UK population now feels financially excluded and the figure is nearly half for black and minority ethnic communities.

> Tough risk controls mean operators have shed clients, and money lenders or poorly regulated fintechs are filling the gap

UKFinance, a lobby group that represents banks and other financial groups, argues regulation is a big part of the problem. Tough risk controls, and restrictions on high-interest products, mean banks have been driven to shed poorer clients.

At the same time, unregulated money lenders or poorly regulated financial technology operators, such as the buy-now-pay-later industry, have been filling the gap. NatWest retail chief David Lindberg told the Financial Times recently of his concern about the growth of the high-cost "shadow credit" system.

The FT-backed Financial Literacy and Inclusion Campaign charity is committed to highlighting problems caused by these dynamics and promotes better financial education.

Another charity, Fair4All Finance, which administers the hundreds of millions of pounds left in dormant bank accounts, is intervening directly in broken parts of the lending market to relieve pressure on the most indebted individuals.

It has spent recent months conducting a pilot study in south Manchester, involving local credit unions and not-for-profits, which have extended loans of a few hundred pounds apiece on an interest-free basis to those in need.

To expand nationwide, the support of big lenders is essential, but they are loath to provide it. Bankers argue that the affordability benefits of an interest-free arrangement over something at commercial rates is marginal, making the initiative unnecessary.

Fair4All says that this misses the point: the no-interest loan brings people into the mainstream who otherwise would not be accepted as borrowers, giving them a chance to build a credit repayment history.

A third of those in the pilot who have repaid their money have gone on to qualify for commercial loans.

Banks for their part are finally dealing with another aspect of financial exclusion with an initiative to open 200-300 shared branches — or "banking hubs" — over the coming three years in locations where the last bank has closed down. (So far there are five.)

The recent dramas in the US and Switzerland have shaken public trust in banking for the second time in 15 years.

Even if those problems do not spread, credit conditions are tightening. It is imperative for their licence to operate that banks — and the policymakers that direct them — ensure credit risks are managed thoughtfully and not by pursuing a strategy of financial exclusion.

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Retail & consumer

Prada heir reaffirms plans for Milan listing

Bertelli says expansion beyond Hong Kong bourse will help to 'build bridges'

SILVIA SCIORILLI BORRELLI AND ADRIENNE KLASA — MONACO

The heir to the Prada fashion empire said rising geopolitical tensions have made a plan to list in its home base of Milan more important to maintain "bridges" between Europe and China more than a decade after going public in Hong Kong.

The Financial Times reported last year that the $19.3bn group, which owns brands including Prada, Miu Miu and Church's, was exploring a dual-listing to tap European investors but the process has been delayed by initial regulatory hurdles. Speaking at the FT Business of Luxury summit in Monaco, Lorenzo Bertelli said he was "optimistic on a dual listing even if nothing is decided yet", without elaborating on timing.

"When we listed there [in Hong Kong], we saw it as a way to connect Europe to Asia, now we see [the dual-listing in Milan] as a way to build bridges between East and West at a time of increased global tensions," the 35-year-old Bertelli said.

European luxury groups are benefiting from booming sales in China following Beijing's decision to lift all Covid-19 restrictions. But they are also facing calls from European leaders such as European Commission president Ursula von der Leyen to "de-risk" their business in China amid greater tensions over the fate of Taiwan.

Bertelli said he also saw threats within China, linked to growing inequalities. "The biggest risk to luxury is too much social tension between rich and poor," he said.

People close to the family have said Bertelli, who is head of corporate social responsibility at the group founded by his parents Patrizio Bertelli and Miuccia Prada, has been an adviser to his parents on strategic decisions for years.

Bertelli, who has worked for the group since 2017, said there was little doubt he would eventually succeed his father.

"Whether it's three, four or five years from now, it doesn't matter. The [family and management] will recognise when it is the right time," he said.

The former racing car driver is ready to take on the "challenge" but is under no pressure, he said. "I risked my life when I was driving cars, so that was a different kind of pressure, I always know that if you work hard then the pressure disappears a bit because you know you have done your best," he said.

Yesterday, he hinted at heated family discussions over work. "My mother and I are Taurus, so is my brother and my father is Aries, so it's quite a challenging environment," Bertelli said, tongue in cheek, adding: "Working with both your parents is not something I would recommend to anybody."

Bertelli, who studied philosophy and has a passion for sports and politics, added he had supported the recent appointment of chief executive Andrea Guerra so he could "learn from someone outside the family".

Prada in January announced that Guerra, a former chief executive at eyewear maker Luxottica, would immediately succeed group executives Patrizio Bertelli and Miuccia Prada to facilitate the succession transition.

Patrizio Bertelli stayed on as group chair while his partner, Prada, is the co-creative director of her eponymous brand alongside Raf Simons.

The group has also appointed its first external chief executive of the brand, Gianfranco D'Attis.

Interview. Pete Briger

Fortress sets sights on boom in distressed debt

Co-founder of US group says its sale by SoftBank presents staff with fresh opportunities

ANTOINE GARA — NEW YORK

A sharp credit contraction caused by the banking crisis and rising interest rates would fuel a wave of defaults, says Pete Briger, co-founder of Fortress Investment Group.

Fortress yesterday was sold by SoftBank to an arm of Abu Dhabi's sovereign wealth fund and the asset manager's own employees.

The expected market turmoil created the best opportunities for distressed-asset investors since the 2008 financial crisis, Briger said. As such, it was a good time for Fortress employees to buy the firm, which specialises in distressed debt and other debt-based investment strategies and has $46bn in assets.

"The amount of credit that is in the world right now is going down every day . . . making it harder for companies to borrow. The banking system itself is also experiencing a restructuring because fractional reserve banking no longer works in its current form," said Briger.

"A lot of damage has been done to asset values, particularly in real estate, growth equity and venture capital."

Yesterday morning, SoftBank announced that it was selling the US-based investment group to Mubadala Capital, an arm of Abu Dhabi's sovereign wealth fund, and Fortress management.

Mubadala will buy 70 per cent of Fortress, while insiders such as Briger will buy the remaining 30 per cent. Fortress employees will control the board of the company and have the ability to become majority owners in the coming years depending on the group's performance.

While terms of the deal were not disclosed, the Financial Times previously reported that Mubadala and Fortress management would pay up to $3bn, less than the $3.3bn SoftBank paid to take the firm private in 2017.

Fortress and Mubadala declined to comment on pricing of the deal.

SoftBank's 2017 takeover of Fortress came as founder Masayoshi Son sought to build an asset management unit of the Japanese investment conglomerate. But SoftBank's large interest in Chinese ecommerce group Alibaba caused US regulators to rule in 2018 that the two businesses could not be integrated.

Much harm has been done to asset values, especially in property, notes Pete Briger, below, of Fortress, 70 per cent of which has been bought by Mubadala, a division of Abu Dhabi's wealth fund

Gary Hershorn/Getty Images; Sarah Deragon

The arms-length partnership had been "good throughout", said Briger, but once SoftBank began to raise its own Vision funds, "we became less interesting to them" and were "not strategic".

In August, SoftBank said that it would consider selling Fortress after a spate of investment losses stemming from its Vision funds. "They were interested in selling for their own idiosyncratic reasons," said Briger, who noted that coming investment opportunities had made it "a very good time to be buying a company like ours".

During sale talks, Fortress told investors that it was "in control of its own destiny" and could ensure that the deal's structure would not undermine investment performance, the FT previously reported.

The buyout will create an opportunity for all Fortress employees to own a piece of the group and spur a succession plan. Briger and Fortress co-founder Wes Edens will step down as co-chief executives, while managing partners Drew McKnight and Joshua Pack will become co-CEOs.

The succession was meant to offer greater opportunity for a new generation of Fortress investors to take leadership positions, said Briger, who will become chair, oversee personnel issues and remain on Fortress's investment committee.

"I could start my own fund within the firm . . . I'm definitely not retiring to play golf," said Briger. "I probably won't be the final say on 400 emails a day."

Edens, who led Fortress's private equity business, will continue overseeing legacy investments such as the 2007 takeover of a Florida-based rail line, which has been transformed into high-speed commuter-rail network called Brightline.

Fortress was the first large private capital firm to go public, listing its shares in early 2007. It spurred a wave of similar offerings as Blackstone, KKR, Apollo and Carlyle all eventually went public.

But Fortress's buyout arm struggled as overleveraged deals such as its takeover of ski operator Intrawest soured during the crisis. Fortress's private equity business has not raised a new buyout fund since.

Its credit arm, overseen by Briger, has grown, though not as fast as those of rivals such as Blackstone.

> 'I could start my own fund within the firm . . . I'm definitely not retiring to play golf'
> Pete Briger

Credit-based assets under management have risen from $24bn at the time of SoftBank's purchase to $42bn.

The group invested heavily during the pandemic and has launched a number of strategies tailored for litigation finance, intellectual property and investments geared towards wealthy individual investors.

Fortress is also raising new flagship funds for "opportunistic" investments and those targeting non-performing loans in Europe.

Briger said that Fortress's careful approach to attracting new assets would be an advantage, as higher rates created issues for many competitors.

"The opportunity really hasn't been there in the last 10 years," said Briger of debt-based investment opportunities. "But there have been some firms that have grown incredibly large at the wrong time in the cycle.

"I think we will get bigger in this kind of environment. I think those firms that have gotten a lot bigger in credit and mezzanine credit could live to regret that."

Technology

Seoul will allow domestic chip groups to fill gap after China bans Micron

RYAN MCMORROW — BEIJING
SONG JUNG-A — SEOUL
TIM BRADSHAW — LONDON
QIANER LIU — HONG KONG

Seoul has signalled that it will not intervene to stop South Korean companies Samsung and SK Hynix from filling in a market gap after China imposed a ban on US chipmaker Micron, in an escalation of the tech battle between the superpowers.

Last month, the White House quietly asked South Korea to urge its chipmakers to hold back from boosting sales to China if the sale of Micron products was restricted by Beijing.

But policymakers in Seoul yesterday said they were unwilling to wade into the dispute and would defer to the companies. "Regarding what the US tells us to do or not to do, it is actually up to our companies. Both Samsung and SK Hynix, with global operations, will make a judgment on this," South Korea's vice-minister of trade Jang Young-jin told reporters. Samsung and SK Hynix declined to comment on the issue.

Washington last year revealed tough chip-export controls on China and has hit Huawei and several of the country's other top tech titans with sanctions. Beijing on Sunday retaliated by imposing sanctions on the US memory-chip champion, limiting its sales in the country on cyber security grounds following a seven-week review.

> 'Regarding what the US tells us to do or not to do, it is up to our companies'
> South Korean vice-trade minister

The measures against Micron outlined by the Cyberspace Administration of China bar critical infrastructure operators from buying products containing the US company's chips because of alleged "serious network security risks".

Mark Murphy, Micron's chief financial officer, said that the Idaho-based group estimated the ban could hit a low to high single-digit percentage of its revenue. "Depending on what type of customers, products and end applications are included in the definition of 'critical information infrastructure', the potential impact would vary," he said yesterday at JPMorgan's technology, media and communications conference.

Micron generated sales of $30.8bn in its fiscal year that ended in September 2022, though a glut of memory chips across the industry has hit its performance this year. Executives say that about a quarter of its sales are typically derived from China.

Murphy said its estimates assume that the ban affects networking and datacentre equipment but not smartphones, with analysts pointing to South Korean groups such as Samsung Electronics and SK Hynix as the likely beneficiaries of rising geopolitical tensions.

Samsung and SK Hynix are also working to increase business in the US and need one-year waivers from the country to be extended so they can ship new equipment into their chip-fabrication facilities in China.

The waivers must be renewed later this year, giving Washington potential leverage to use against the companies.

Additional reporting by Eleanor Olcott in Hong Kong, Nian Liu in Beijing and Demetri Sevastopulo in Hiroshima

See Lex

Automobiles

Ford agrees string of lithium supply deals

CLAIRE BUSHEY — CHICAGO
HARRY DEMPSEY AND PETER CAMPBELL
LONDON

Ford has struck a series of supply deals for lithium as it revealed that it needs to close a $7bn cost gap with its rivals to remain competitive.

The carmaker will work with established industry groups Albemarle and SQM, as well as three developers, to supply the material for batteries that power EVs.

The group told those gathered for its investor event yesterday that its costs were $7bn higher than competitors', mostly stemming from vehicle complexity and "chronically inefficient" suppliers in its traditional engine-vehicle business Ford Blue.

Ford chief executive Jim Farley said that reducing costs was the "biggest focus" of the company and supply-chain deals would offer carmakers "strategic" advantages as the industry prepared to increase sales of electric vehicles.

The supply of lithium is one of the bottlenecks expected in the rollout of electric vehicles as the mining and chemical processing industries struggle to meet the near-fivefold increase in demand by 2030.

The supply agreements should help Ford source sufficient raw materials from the US and free-trade partner countries to meet thresholds to receive a $3,750 consumer tax credit under the Inflation Reduction Act, the lithium producers said. The maximum credit is valued at $7,500.

Ford's lithium-sourcing plan represents greater alignment with Washington's goals for a US electric-vehicle supply chain independent of China compared with its gamble on China's CATL and Huayou Cobalt for battery technology and nickel, respectively.

"With the growing demand for EVs in the United States, our customers are seeking to regionalise their supply chain for greater security, sustainability and lower costs," said Eric Norris, president of energy storage at Albemarle.

Based on public disclosures by the mining companies and Financial Times calculations, Ford could secure enough lithium for up to almost 1.1mn EVs a year, assuming all projects manage fully to scale up on time and deliver consistently.

Those calculations exclude undisclosed volumes from the industry number two SQM and EnergySource Minerals.

Albemarle, the largest lithium producer, said yesterday that it planned to supply Ford with 100,000 tonnes of lithium hydroxide across five years to the end of 2030, enough for 3mn EVs.

Ford's deals come after lithium has bounced up to about $32,000 per tonne after a fourth-month crash that cut prices two-thirds owing to a weak EV market in China.

Travel & leisure

Galaxy lifts revenue as Macau fortunes revive

PRIMROSE RIORDAN — HONG KONG

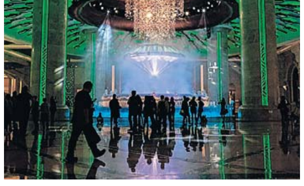
Macau casino groups have enjoyed a rebound in the first quarter, with Galaxy Entertainment yesterday becoming the latest to report a big recovery in revenues after the lifting of Covid restrictions.

The Chinese territory regained its long-held status as the world's casino capital in the first quarter when it overtook Las Vegas in terms of gross gambling revenue, having fallen behind after strict pandemic policies shut the territory off from customers.

Hong Kong-listed Galaxy Entertainment said net revenue had recovered to more than half its pre-pandemic figures. Apart from its Galaxy and StarWorld casinos on Macau, the group has a shareholding in rival Wynn Resorts and is seen as better adapted to the current environment where the focus is on the mass market.

"[The results affirm Galaxy as] our top pick in the Macau gaming sector alongside Sands China," JPMorgan's DS Kim said yesterday, referring to the late Sheldon Adelson's Las Vegas Sands Macau business, which has also been focusing on ordinary players instead of high rollers.

The strength of the rebound surprised analysts, considering a crackdown that included the arrest of big promoters who had been shipping in high-spending "VIPs". That has led to the shift in focus to mass-market players, but even the VIP segment has been showing signs of recovery. Ben Lee, a casino analyst at IGamiX, said: "We all expected the VIP segment would be quite depressed [compared] to what it had been in the past, but the stronger-than-expected rebound . . . has surprised us all."



The casino group's sales have reached more than half their pre-Covid levels

Galaxy's earnings before interest, tax, depreciation and amortisation were higher than a consensus estimate of HK$1.7bn. Net revenue reached HK$7bn, compared with HK$13bn in the same quarter in 2019.

"Galaxy reported ebitda of HK$1.91bn ($240mn), implying a 48 per cent recovery versus pre-Covid levels. This is in line with its peers' 46 per cent recovery on average in quarter one. The upside came from . . . solid mass performance," said Kim.

Sands China had previously reported net revenue of $1.27bn for the first quarter, compared with $2.33bn in the same quarter of 2019.

COMPANIES & MARKETS

French grocery chain Casino starts creditor talks as big investors circle

Debt-laden supermarket faces complex lender conciliation and competing plans to keep business running

ADRIENNE KLASA AND LEILA ABBOUD — PARIS
ROBERT SMITH — LONDON

French supermarket chain Casino is expected to begin official negotiations with creditors this week, as a group of wealthy investors circle the indebted retail empire built by Jean-Charles Naouri.

Saddled with too much debt, declining revenues and a loss of market share, Casino, which owns the Franprix and Monoprix chains, has been ailing for several years. The retailer's parent companies through which Naouri controls Casino have been in court-supervised restructuring since 2019.

This week Casino is expected to enter a voluntary negotiation with its creditors — called a *procédure de conciliation* — that will be overseen by a court-appointed official, Marc Sénéchal, a lawyer specialising in such cases, according to people involved in the process.

Under French law, the step is one short of a court-supervised debt restructuring, though it may pave the way for such a move, but for now it opens up a critical chapter for a company that employs 53,000 people and is the country's sixth-biggest food retailer by market share.

The decision to begin official negotiations with creditors, which include big French banks and international hedge funds, comes as Casino has drawn interest from a handful of high-profile investors and billionaires.

In April, Czech billionaire Daniel Křetínský, already Casino's second-largest shareholder, offered to lead a €1.1bn investment, a move that would dilute Naouri and rip control of the supermarket chain from him. The proposal is backed by investor Marc Ladreit de Lacharrière, whose Fimalac group is now Casino's third-largest shareholder.

Křetínský's intervention initially looked like it could derail a plan announced in March to combine Casino's French retail business with Teract, a smaller rival backed by entrepreneur Moez-Alexandre Zourari, tech billionaire Xavier Niel, and investment banker Matthieu Pigasse.

But as the pressure intensifies, the two camps are talking and will be involved in the conciliation process that is designed to reach agreement both on Casino's debt and the eventual structure of the group, according to people familiar with the matter.

The retailer and the holding companies through which Naouri controls his stake have €4.9bn in debt repayments due by 2025. Casino had €6.4bn of debt at the end of last year.

Naouri has long tried to preserve his controlling stake despite the deteriorating picture at Casino and parent companies including Rallye. His chances look increasingly slim, the people said.

"Everyone is talking to everyone. They all know each other," one person said. "[Naouri] is now obliged to do a deal where he will lose control . . . Last year he didn't think he had to, but the business has deteriorated since then."

Earlier this month, rating agency S&P Global downgraded Casino, saying "a default, distressed exchange or redemption appear inevitable within six months", without unanticipated positive changes in the group's circumstances.

A customer shops at a Casino outlet in Villefranche-sur-Saône. The group is France's sixth-biggest food retailer, with 53,000 staff and a host of suppliers — Jeff Pachoud/AFP via Getty Images

Casino said it was "carefully reviewing the various expressions of interest" in the group and that "ultimately, decisions will rest with the board". Teract declined to comment and Křetínský did not respond to a request for comment.

The proposals from Teract and Křetínský would provide relief in different ways for Casino, which reported an almost 5 cent decline in revenues at its French business last quarter.

The former would spin out the French retail operation, reposition the group upmarket with a focus on farm-fresh products, provide a cash injection of at least €300mn, and an option to sell stores to competitor Intermarché. Křetínský's offer, meanwhile, would deliver more funding but not address the chain's operational problems.

The lenders to Casino and Naouri, which include BNP Paribas and Crédit Agricole, will also have sway over the final outcome, while secured and unsecured creditors include several US and European hedge funds.

"There are so many parameters and players, so it's hard to predict how it all could shake out," said one person involved. "It's more complicated than three-dimensional chess."

Depending on how the conciliation process goes, Casino may yet end up in a more extensive debt restructuring process, known in France as a *procédure de sauvegarde*. It has two forms, accelerated and standard.

One advantage of trying to restructure the debts within the conciliation or accelerated safeguard framework is that the process is confined to financial stakeholders, keeping suppliers out of it. "Bruno Le Maire [finance minister] will not allow them to default" on suppliers, said one Casino bondholder.

Given the size of Casino's staff and its range of suppliers, Paris is closely monitoring events. But determining Casino's future will be complicated by the labyrinthine structure that Naouri has built. Its steady slide from investment-grade credit to the lowest reaches of junk have left the group with outstanding bonds and loans on multiple terms.

The complex picture makes forging any agreement among its creditors particularly fraught, creditors and advisers say. For example, a portion of Casino's secured loans is expected to be assumed by Teract if that deal is struck, an arrangement that would prove contentious if those lenders are still able to have a say on debt that is left at what remains of Casino. Meanwhile, some owners of Casino's unsecured bonds also have more investor protections than others, a further obstacle to creditors finding common ground.

There are signs that Křetínský and the backers of the Teract proposal are open to working together. Křetínský told Le Point magazine that his injection was "not contradictory" to Teract's project, while Zouari told Agence France-Presse they would be "happy to partner with someone as seasoned" as Křetínský.

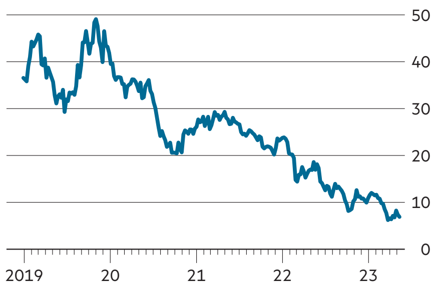
"The likelihood of seeing both Křetínský and Teract taking over Casino is now higher than ever," said Clement Genelot, analyst at Bryan Garnier. Genelot added that one possible scenario would give Teract 30 per cent of Casino's core French business, Intermarché about a quarter, Křetínský around 20 per cent and Naouri under 10 per cent.

But with the talks in the *procedure de conciliation* only expected to begin this week, there is unlikely to be a quick fix for Casino.

> '[Naouri] is now obliged to do a deal where he will lose control . . . Last year he didn't think he had to'

> 'There are so many parameters and players, so it's hard to predict how it all could shake out'

Casino's steady slide
Share price (€)



Source: Refinitiv

Banks

JPMorgan expects $3bn boost from First Republic

JOSHUA FRANKLIN — NEW YORK

JPMorgan Chase lifted its outlook for how much it expects to earn this year from its lending business following the purchase of First Republic, bucking a trend among US banks of shrinking profits owing to deposit withdrawals.

At its investor day yesterday, JPMorgan lifted its 2023 target for net interest income (NII), excluding its trading division, from $81bn to about $84bn, because of its deal for First Republic. NII is the difference between what banks pay on deposits and what they earn from loans and other assets.

However, JPMorgan said "sources of uncertainty remain" in the guidance and its "medium-term" outlook was for NII in the mid-$70bn range, in part because of an eventual need to pay higher interest rates to savers.

The increased guidance underscores how big banks such as JPMorgan have won from the crisis at some regional lenders, with the group taking in new deposits and buying the remnants of First Republic in a government auction.

Large lenders such as JPMorgan have benefited from the US Federal Reserve lifting interest rates last year, which enabled them to charge borrowers more for loans without passing on significantly higher rates to savers.

The bank said its deposits, which totalled $2.3tn at the end of March, were "down slightly" year on year. Chief financial officer Jeremy Barnum said the expectation was that deposits at US banks would continue to fall as the Fed tightened monetary policy and customers chased better yields on their cash.

JPMorgan is paying 1.21 per cent on average to depositors, lower than the 1.75 per cent average of peers, according to data from industry tracker BankReg.

The bank said credit losses remained below pre-pandemic levels, but that there would probably be "continued normalisation" throughout 2023.

Banks

Mizuho in $550mn deal for Greenhill boutique

SUJEET INDAP — NEW YORK
LEO LEWIS — TOKYO

Mizuho has agreed to buy boutique investment bank Greenhill & Co in a $550mn deal, betting that the struggling firm can help kick-start its ambitions in the US.

Greenhill was one of the first M&A advisory firms to go public when it sold shares in 2004, but in recent years has faced an ever-growing wave of competitors including Moelis, PJT Partners and Centerview Partners.

Mizuho, one of Japan's largest financial institutions, will pay $15 a share for Greenhill, more than double the stock's closing price on Friday. Greenhill shares were up 117 per cent at lunchtime yesterday.

The acquisition is the latest move by Mizuho to make good on its investment banking ambitions in the fiercely competitive US market.

Mizuho said Greenhill would sit in its existing banking division and be led by Michal Katz, its head of banking in the Americas. The group intends to retain Greenhill's brand and management.

Investment bankers in Tokyo have said that they expect deteriorating relations between the US and China to provide an impetus for Japanese groups to strike more overseas deals.

Some Japanese businesses have begun redrawing their supply chains to avoid China, a trend that bankers believe will prompt them to make more foreign acquisitions.

Mizuho is betting on an M&A boutique whose revenues dwindled to just $50mn in the first quarter, as a slowing economy and turmoil in the banking sector killed off dealmaking.

Founded in 1996 by ex-Morgan Stanley banker Robert Greenhill, the firm pitched itself to clients as a way for them to avoid conflicts of interest that could arise when dealing with bulge-bracket investment banks.

See Lex

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Fixed income. Tide turning

Asset managers rush back into bonds after 'cataclysmic' year

Debt pile: State Street Global Advisors chief executive Yie-Hsin Hung said there were 'enormous moves' into fixed income in a speech to the Milken Institute conference this month
Patrick T. Fallon/AFP/Getty

Capital Group projects $1tn flow in next few years as big investors lock in higher yields

MADISON DARBYSHIRE AND HARRIET AGNEW

Large asset management firms are piling back into fixed income to lock in the higher yields on offer, after a "cataclysmic" period of performance for bonds last year.

A steep rise in US interest rates over the past 12 months sent bond prices tumbling but has now left yields on Treasuries higher than they have been for most of the past decade.

With the US Federal Reserve close to the end of its tightening cycle, institutional and retail investors are buying both sovereign and corporate bonds.

"Bonds are exciting again, for the first time in a long time," Sebastien Page, chief investment officer of T Rowe Price's global multi-asset strategy, told the Financial Times. "They were boring with zero rates for several years."

Page likes high-yield corporate bonds, adding: "It's very simple — yields are much higher than they were and it just means you have higher expected returns."

More than $332bn flowed out of active fixed income strategies in the US last year, according to Morningstar data.

But the tide has now turned and more than $100bn has poured into fixed income funds during the first four months of this year.

Managers are equating the shift in capital into fixed income with the scale of the movement of assets from actively managed funds into lower cost passive funds that track an index, a shift over the past decade that has fundamentally reshaped the asset management sector.

"We're seeing enormous moves into fixed income," said Yie-Hsin Hung, the chief executive of $3.6tn-in-assets State Street Global Advisors at the Milken Institute conference earlier this month, noting large flows into bond exchange traded funds and passive funds. "It feels like the beginning stages of what happened in equities, moving much more into passive."

Mike Gitlin, chief executive of Capital Group, which manages $2.2tn in assets, told the conference that, due to the higher interest rate environment, "we're seeing an average of $500mn in net new flows into the bond markets at Capital Group per week".

He added: "I think you'll see $1tn flow back into the bond market in the next few years. I think it's coming and I think you'll see it accelerate."

Investors raise bets on US Treasuries

Asset managers' open interest in two-year bond futures (number of contracts, '000)

Source: CFTC

Part of the shift in enthusiasm is down to the fact that bonds performed so badly last year.

The yield on the two-year US Treasury, which moves with interest rate expectations, rocketed from 0.7 per cent to 4.4 per cent while the 10-year yield jumped from 1.5 per cent to 3.8 per cent.

The bonds now yield 4.2 per cent and 3.6 per cent, respectively. Bond prices fall as yields rise.

Page declared that "2022 was cataclysmic for fixed income. It was by some measures, the worst year on record".

The ability to generate high yields while taking relatively low levels of risk is set to allow more traditionally risk averse investors — such as those who handle retirement savings — to allocate into the space.

"Finally people can allocate to fixed income and get a return," said Franklin Templeton chief executive Jenny Johnson on an earnings call earlier this month. "You could have one-third of your pension fund in fixed income and still hit your target."

Investors are betting that the Fed may be forced to cut interest rates as soon as this year.

Asset managers have the largest long position — a bet that prices will go up and yields will come down — in two-year Treasury notes since January, according to data from the Commodity Futures Trading Commission.

"We think that, as interest rates calm in the market, we feel like there will be one more raise and then sit there through 2023, and probably not have a decrease," said Johnson. "People will try to lock in those higher rates."

However, she added that not all fixed income is set to yield outsized returns this year and active selection of bonds will become more crucial. "It's an important time to be active in the fixed income space. This is not a great time to be passive in it."

Asset managers said actively managed fixed income has also become a preoccupation for their clients after years of credit being a relatively quiet part of their portfolio.

"We have seen a significant uptick in interest from clients," said Eric Burl, the head of discretionary at Man Group in the UK.

"The utility of fixed income in your portfolio has completely changed . . . It's not just that you can make equity-like returns but that's clearly part of it," Burl added.

"It's a time to be more active rather than less," he said. "Now's not the time to own the entire market."

> 'Bonds are exciting again. They were boring with zero rates for several years'

FT
Our global team gives you market-moving news and views, 24 hours a day
ft.com/markets

Fixed income

Athens debt prices jump on premier's big election win

MARY MCDOUGALL AND MARTIN ARNOLD

The price of Greek government bonds shot higher yesterday after Prime Minister Kyriakos Mitsotakis secured a bigger than expected share of the vote in Sunday's election.

The yield on 10-year benchmark Greek debt dipped by more than 0.15 percentage points to 3.85 per cent as markets responded positively to the result, which left Mitsotakis's party just four seats short of the 150 needed for a parliamentary majority. A new vote is set for next month.

The move means the gap — or spread — on Italian bond yields above Greek bond yields is now at its highest level since at least 1999 and above the level hit last summer, according to Bloomberg data. Italian debt yields 4.3 per cent.

Greece and Italy are viewed as two of the more risky debt markets in the EU but yields on Greek debt have traditionally been the higher of the two, reflecting the market's worries about the country's debt burden.

Its yields rocketed during the Greek debt crisis in 2011 and 2012.

A couple of times the spread has briefly turned negative — meaning Greece's borrowing costs were lower than those of Italy — most notably at the end of 2019.

Most recently, the spread turned negative again in April of this year and has been widening as Greece edges closer to restoring its investment grade status.

> 'For once, the market got it right. Under Mitsotakis, Greece has turned into the star performer'

"For once, the market has got it right," said Holger Schmieding, chief economist at German investment bank Berenberg.

"Italy is performing remarkably well under Giorgia Meloni. But under Kyriakos Mitsotakis, Greece has turned into the star performer among the more significant eurozone countries," he said.

Both Greece and Italy have been among the bloc's best performing bond markets this year.

An ICE Bank of America Index of Italian bonds shows a total return of 2.7 per cent year to date while its Greek counterpart has gained 4.2 per cent. That compares to a return of 1.2 per cent for the eurozone.

The fall in Greek 10-year bond yields yesterday narrowed their spread with German bonds — a popular risk measure — to 136 basis points, the lowest level since November 2021.

The surge in Greek bond prices was likely to have been fuelled by "fast money" investors buying the bonds to front run any upgrade to investment grade status, which would open up Greek bonds to a wider pool of investors, say analysts.

According to Sean Kou, a rates strategist at Société Générale, "an [investment grade] upgrade [for Greece] is priced in now".

Currencies

India seeks to calm nerves after pulling highest-value notes from circulation

JYOTSNA SINGH AND BENJAMIN PARKIN
NEW DELHI

India's central bank sought to calm the public after its decision to withdraw its highest-value currency notes from circulation triggered alarm about financial stability.

The Reserve Bank of India announced on Friday that it would eliminate Rs2,000 ($24) notes, instructing the public to exchange or deposit them at banks by the end of September.

The RBI added the notes would remain legal tender, though it did not clarify for how long.

The cash withdrawal, which begins today, echoed Prime Minister Narendra Modi's controversial decision in 2016 to invalidate Rs500 and Rs1,000 notes overnight, which were equivalent to more than 80 per cent of currency in circulation.

Purportedly a crackdown on illicit and untaxed "black money", the dramatic move forced people around the country to rush to banks to trade in their notes.

RBI governor Shaktikanta Das yesterday downplayed comparisons with the demonetisation in 2016, calling the Rs2,000 note withdrawal part of regular "currency management operations".

He added: "I do not expect a rush to the bank branches. There's no reason to rush to the bank."

The RBI said Rs2,000 notes were introduced as a temporary measure to boost cash supplies after the 2016 demonetisation and that it had stopped printing them in 2019.

The notes were not "commonly used for transactions anymore", the central bank said, adding that they accounted for about 10 per cent of currency in circulation.

The Indian central bank is to eliminate Rs2,000 banknotes

Analysts said that, although the announcement was unlikely to disrupt India's economy as in 2016, it would ripple through markets as businesses and households handed in their notes.

The rupee weakened 0.01 per cent against the dollar in trading in India yesterday.

"Any step like this is disruptive," said Shumita Deveshwar, senior director at research consultancy TS Lombard. "The difference this time is that they're giving more time for people to switch their notes over . . . People who don't have money stashed in an illegal way are going to be OK."

Economists and businesses have fiercely debated the legacy of the demonetisation policy.

While it helped funnel money into the formal financial sector, it caused enormous pain to cash-reliant small businesses that weighed on growth for years afterwards, according to some experts.

Additional reporting by Hudson Lockett in Hong Kong

Equities

PE firms sell stakes at a discount in sign of lowered expectations over valuations

NICHOLAS MEGAW AND ANTOINE GARA
NEW YORK

Private equity firms are increasingly selling shares in portfolio companies at a discount to the price at which they went public — in a sign they do not expect stock market valuations to regain their previous highs soon.

So-called "follow-on offerings" of shares in previously listed companies are a key way for private equity firms to monetise their investments and return cash to investors.

Sponsors traditionally sell a fraction of their portfolio company in an initial public offering, then try to sell down the rest of the stake at increasingly high prices over the following years.

Follow-ons were badly hit by last year's stock market declines with sales by PE-backed companies dropping more than 70 per cent, according to Dealogic data, as investors hoped to ride out the downturn.

However, sales have started to rebound despite the fact that valuations for the most recently listed groups are still languishing well below their peaks.

PE-backed follow-ons in the US are up 180 per cent year on year, but almost two-thirds of the deals were priced below the companies' IPO, according to an FT analysis.

"Investors can't wait forever," said one senior equity capital markets banker. "The view that firms can't do a deal unless there's been a specific return since the IPO or if it's below where they've sold stock in the past, I think that's gone out the window."

> 'The view that firms can't do a deal unless there's been a return since the IPO, that's out the window'

The most extreme discount to an IPO price came in March when Blackstone sold a 10 per cent stake in dating app Bumble for just over $300mn, about half of what it was worth when it went public in 2021.

Blackstone and Bumble founder Whitney Wolfe Herd sold shares at $22.80 each compared with $43 per share at its IPO in early 2021.

Other big firms to sell stakes in portfolio companies at a discount to their previous price include Apollo, General Atlantic and Vista Equity Partners.

The sales are unlikely to lead to actual losses for the PE sponsors — Blackstone, for example, had already recouped the $3bn it paid for a majority stake in Bumble in 2019.

But the willingness to accept smaller profits suggests that firms have stopped waiting for a shift in equity valuations as they look to return capital quickly to limited partners.

Many of these private equity firms are currently fundraising and the sales are helpful to their efforts to raise new investor cash for corporate buyouts in an otherwise weak market.

Vista has been particularly active in recent quarters selling assets for a profit, having agreed the $4.6bn sale of Cvent to Blackstone in March and a flurry of sales last year.

PE investors have raised $6.7bn in follow-ons so far this year compared with $6.3bn across the whole of last year.

Blackstone sold more than $3bn in shares this week in London Stock Exchange.

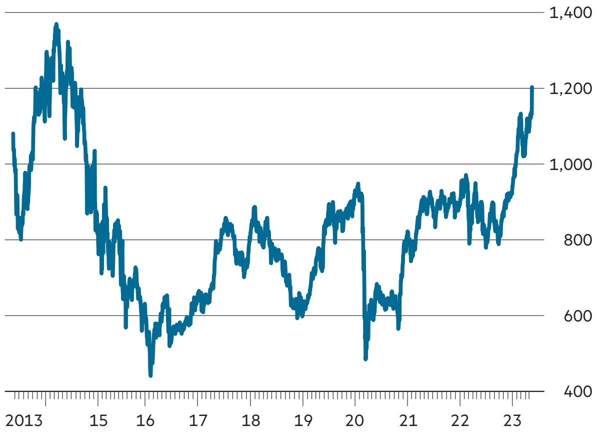
The day in the markets

What you need to know

- **Wall Street ekes out small gains with debt ceiling talks restarting**
- **US government bonds attract sellers as yields rise**
- **European stocks struggle for direction but London's FTSE edges higher**

Greece's stock market hits 8-year high after election

Athex Composite Share Price Index



Source: Bloomberg

Wall Street stocks eked out small gains yesterday as policymakers balanced concerns over political progress to raise the US debt ceiling and hopes that the Federal Reserve's policy to raise interest rates may be over.

The tech-heavy Nasdaq Composite rose 0.4 per cent while Wall Street's benchmark S&P 500 was flat by midday trading in New York.

Both indices fell on Friday after US policymakers paused negotiations over the debt ceiling deal, raising the risk that they will fail to reach a compromise ahead of the early-June deadline and trigger an unprecedented default.

Returned to the negotiating table, President Joe Biden and Republican House Speaker Kevin McCarthy were due to meet later yesterday, having discussed the issue over the phone a day earlier.

Meanwhile, markets were encouraged by Fed chair Jay Powell, who warned on Friday that tighter credit conditions, brought about by the US regional banking turmoil, could limit how far the central bank needed to raise interest rates to bring inflation back to its 2 per cent target.

Traders awaited today's US purchasing managers' index data release, which tracks changes in manufacturing and services activity, signalling the extent to which high rates have slowed the economy.

"As long as growth is holding, the market can deal with [the increase in] rates," said Emmanuel Cau, head of European equity strategy at Barclays.

"What you don't want is a clear loss of momentum in the economy that will mean that central banks have done too much and now we are shifting from inflation to recession," he added.

Yields on interest rate-sensitive two-year Treasury bonds rose 4 basis points to 4.33 per cent while those on benchmark 10-year Treasuries rose 3bp to 3.72 per cent as the debt attracted sellers.

Greece's main stock market, the Athex Composite Share Price index, jumped 6.1 per cent to an eight-year high a day after an election in which Prime Minister Kyriakos Mitsotakis routed his rivals and came one step closer to securing another four-year term.

Greek bonds rose with yields on 10-year debt falling 14bp to 3.88 per cent, their lowest level since early December.

Equity trading on the continent struggled for direction with the region-wide Stoxx Europe 600 ending flat. Frankfurt's Xetra Dax fell 0.3 per cent but London's FTSE 100 added 0.2 per cent.
Daria Mosolova

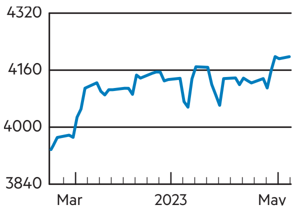
Markets update

	US	Eurozone	Japan	UK	China	Brazil
Stocks	**S&P 500**	**Eurofirst 300**	**Nikkei 225**	**FTSE100**	**Shanghai Comp**	**Bovespa**
Level	4197.85	1856.55	31086.82	7770.99	3296.47	110642.20
% change on day	0.14	-0.03	0.90	0.18	0.39	-0.09
Currency	**$ index (DXY)**	**$ per €**	**Yen per $**	**$ per £**	**Rmb per $**	**Real per $**
Level	103.067	1.080	138.585	1.242	7.030	4.965
% change on day	-0.127	0.093	0.058	-0.161	0.101	-0.552
Govt. bonds	**10-year Treasury**	**10-year Bund**	**10-year JGB**	**10-year Gilt**	**10-year bond**	**10-year bond**
Yield	3.721	2.455	0.382	4.202	2.754	11.529
Basis point change on day	5.660	3.000	-1.970	6.400	-0.100	-0.300
World index, Commods	**FTSE All-World**	**Oil - Brent**	**Oil - WTI**	**Gold**	**Silver**	**Metals (LMEX)**
Level	434.29	75.92	72.01	1961.60	23.66	3722.00
% change on day	0.24	0.45	0.45	0.07	0.60	0.89

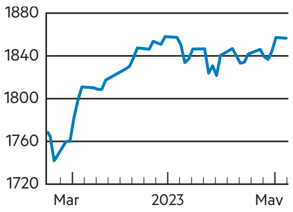
Yesterday's close apart from: Currencies = 16:00 GMT; S&P, Bovespa, All World, Oil = 17:00 GMT; Gold, Silver = London pm fix. Bond data supplied by Tullett Prebon.

Main equity markets

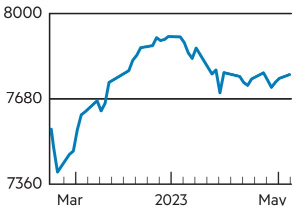
S&P 500 index



Eurofirst 300 index



FTSE 100 index



Biggest movers

%	US		Eurozone		UK	
Ups	Match	5.81	Dassault Systemes	4.64	Standard Chartered	3.03
	Zions Ban Na	5.66	Erste Bank	3.38	Admiral	2.53
	Epam Systems	4.62	Novo Nordisk	2.59	Ocado	2.39
	Pfizer	3.81	Adidas	2.48	Bt	2.00
	Align Technology	3.62	Caixabank	2.17	Flutter Entertainment	1.98
Downs	Everest Re Ltd	-3.50	Generali	-5.05	Frasers	-2.22
	Arch Capital Ltd	-3.34	Bnp Paribas	-4.75	Convatec	-1.77
	Micron Technology	-2.75	Intesa Sanpaolo	-3.12	Vodafone	-1.73
	Nike	-2.67	Mapfre	-2.19	Halma	-1.72
	American Airlines	-2.57	Brenntag	-1.97	Smiths	-1.49

Prices taken at 17:00 GMT. Based on the constituents of the FTSE Eurofirst 300 Eurozone. All data provided by Morningstar unless otherwise noted.

Wall Street

Chipmaker **Micron Technology** fell after revealing that the Cyberspace Administration of China had deemed its products a "cyber security risk", it said.

The regulator told "critical information infrastructure operators" in China to stop using Micron products.

Rabobank said the move was part of a "Great Game" in which semiconductors were "increasingly shaping up as the new oil", with this curb coming after "moves by the USA, Japan and the Netherlands in recent months to restrict China's access to critical chip technology".

Greenhill & Co soared on news that Mizuho was buying the investment bank for $15 a share, more than 120 per cent above its most recent closing price.

Following completion of the $550mn deal, Greenhill would become the M&A and restructuring advisory business of the Japanese financial services group. That division would maintain the Greenhill brand.

In more dealmaking news, US-listed Swiss biotech group **VectivBio** surged after agreeing to be bought by Ironwood Pharmaceuticals for $17 per share, a 43 per cent premium to Friday's closing price.

Ironwood would have access to Apraglutide, VectivBio's experimental treatment for short bowel syndrome that was in a late-stage trial. *Ray Douglas*

Europe

Greek stocks rallied in the wake of Kyriakos Mitsotakis's strong showing in national elections.

The prime minister unexpectedly increased his centre-right party's share of the votes, although its final tally is likely to fall short of a parliamentary majority.

Greek banks led the rally, outperforming the wider market, with **Alpha**, **Piraeus**, **Eurobank** and the **National Bank of Greece** all rising sharply.

Pundits expected Mitsotakis to call for new elections in about a month rather than seek a coalition.

Ryanair climbed after returning to profitability in the year to March 31.

The budget airline posted profit after tax but before exceptionals of €1.43bn, topping analyst estimates of €1.4bn.

The beat was primarily driven by better than expected pricing with full-year fares up 10 per cent against pre-Covid levels.

A downgrade weighed on Germany's **Hornbach**, the do-it-yourself store chain, which had its rating cut from "buy" to "hold" by Berenberg.

The revision followed guidance by Hornbach last week in which it suggested that operating earnings could fall in its 2023-24 financial year.

Feeding into the broker's concerns was also the recently lowered outlook from "indirect" US counterpart Home Depot.
Ray Douglas

London

Near the top of the FTSE 250 index was IT provider **Kainos**, which posted a 24 per cent year-on-year jump in annual revenue to £374.8mn — the upper end of expectations, said Shore Capital.

The broker flagged a backlog of contracted sales worth £322.9mn as of March 31, up by 24 per cent on the same period last year, a total that boded well for the current financial year, it noted.

At the opposite end of the mid-cap index was **Dechra**, the veterinary pharmaceuticals group, which warned that its underlying operating profit for its financial year would be below £186mn, a target provided in February.

The company, which confirmed earlier this year that it was having takeover talks with private equity firm EQT, blamed the downgrade on destocking and an environment that was "more volatile and challenging than anticipated".

Max Herrmann, Stifel healthcare analyst, said this was "disappointing news", increasing "the risk that EQT may lower its offer price".

Anglo-Russian miner **Polymetal** dived after its Russian operation was placed on a US sanctions list over the Ukraine war.

Polymetal said it took "sanctions compliance very seriously" and was "fully committed to ensure rigorous compliance with all applicable laws and regulations, including US sanctions". *Ray Douglas*

Collective wisdom of investors will outperform AI

David Booth

Markets Insight

Can artificial intelligence help pick stocks? More specifically, can investors use AI to determine the fair price of a stock or a bond? I bet a lot of people right now would say yes, given recent advances that allow for the processing of ever greater amounts of information.

I think my AI is better than all the other ones out there. My AI is the market. For example, pick a stock. Check the price. Why is it that exact price? Because an equal number of buyers and sellers think they are getting a good deal when they sell or buy it at exactly that time.

They make those judgments using every piece of information available to them, both public and private.

The market is the world's largest information processing machine, which creates a price for every publicly traded stock and bond.

These prices are set in an environment where no one knows what's going to happen. So in that sense, it is a giant model that is humanity's best and constantly evolving guess of how each company stock or bond will perform.

Despite all the promise of AI, I prefer to accept market prices rather than prices from algorithms.

Large language models, the types of AI that power tools such as ChatGPT, are intended to understand and generate text that seems as if it was made by humans, not predict future outcomes.

They can generate potential scenarios based on learnt patterns but they struggle to account for unknown factors or real-world changes that come outside their training data.

In that way, they are truly "artificial" while markets are composed of real, human intelligence and the millions of judgments market participants make.

Sure, AI and algorithmic trading can help the execution of trades. But there's no reason to think that AI should fundamentally influence the way people think about stock prices anytime soon.

The market is fantastically complex. So much so that no one knows exactly how much a particular piece of information impacts a price because there are so many other simultaneous inputs.

But the market ensures that a price is the most accurate current representation of the value of a stock or bond. It's free and available to all.

How great is that? This isn't just my opinion. There's plenty of evidence to support it. In fact, it's a 50-year-old theory that only gets more proven with each passing year. Google "efficient market hypothesis". Better yet, ask ChatGPT to explain it.

> The market ensures that a price is the most accurate representation of the value of a stock or bond

Still don't believe me? Then let me ask another question: Do you think you can hire a manager to implement the strategy of using AI to pick stocks that consistently beat the market? After fees, probably not.

If they had some cool AI that actually did predict stock prices better than the market, why would they share the information with you?

What's the takeaway? You can have a good experience without worrying about all that stuff. Based on nearly a century's worth of data, the stock market has returned about 10 per cent a year, which is 7 per cent above inflation.

That was true before and after computers, before and after the internet, and even before and after the second world war. It makes sense to me that it will continue to be the case after AI.

Because our AI is "aggregate intelligence," which includes artificial intelligence and betters it.

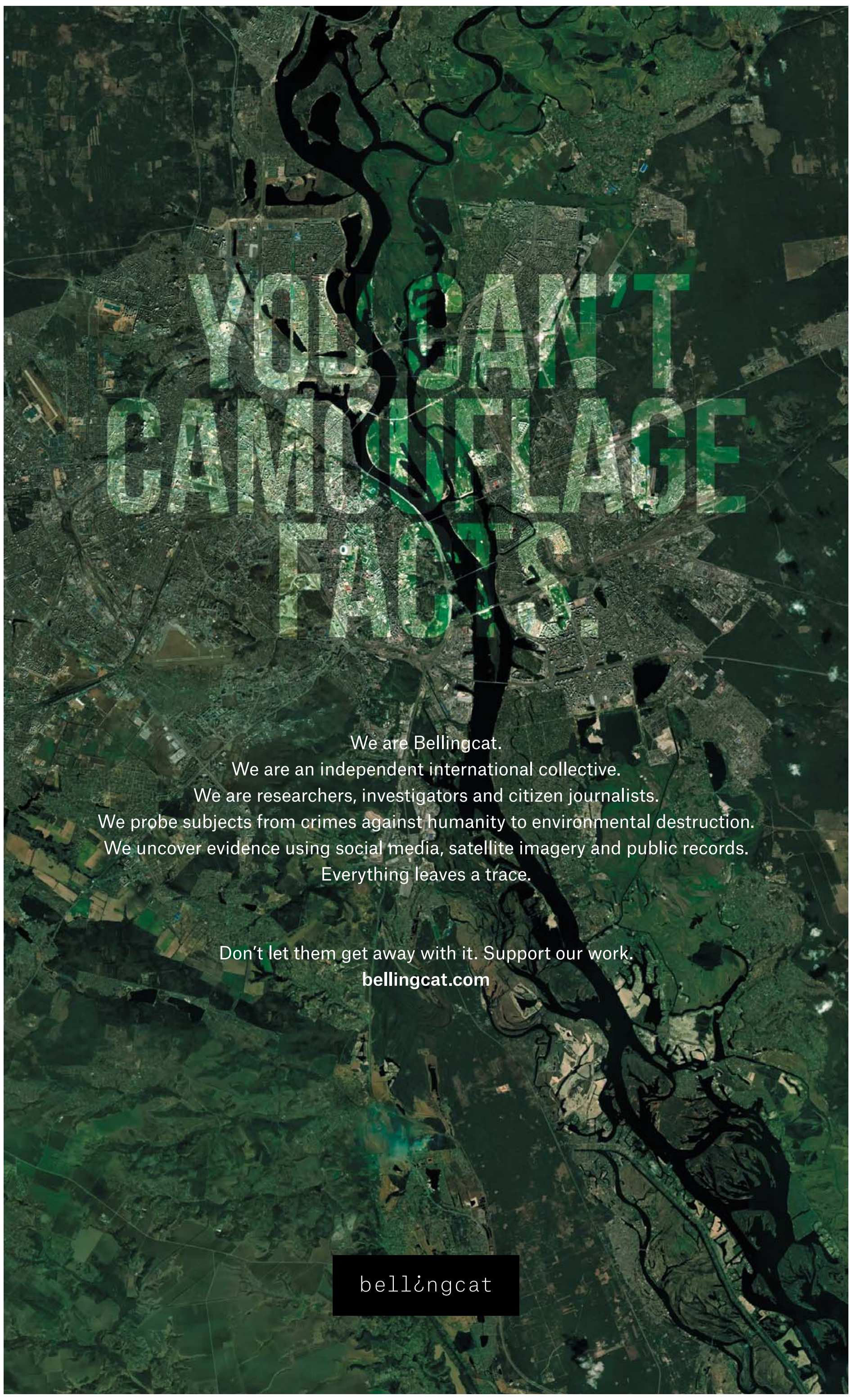
To be clear, I celebrate the innovation that this moment may represent. As I have witnessed over and over during the past 50 years of my career, many players will try to take advantage of the newest advance in technology to improve their company and also to build new ones. By buying the market, you can have a piece of all the publicly traded companies.

If I still haven't convinced you, I asked ChatGPT: "Is it safer to trust the market price mechanism than rely on an AI model to find mispricing in stocks and bonds?"

Here's what I got back the day I asked: "It is generally safer to trust the market price mechanism than to rely on an AI model to find mispricings in stocks and bonds. The market price mechanism is based on the collective actions of all market participants and incorporates all available information into asset prices. As a result, it is difficult for any single investor or AI model to consistently outperform the market by identifying mispricings."

So if you don't trust me, trust the AI that is telling you not to trust the AI over the market.

David Booth is founder and chair of Dimensional Fund Advisors. The Booth School of Business at the University of Chicago is named after him



MARKET DATA

WORLD MARKETS AT A GLANCE

FT.COM/MARKETSDATA

Change during previous day's trading (%)

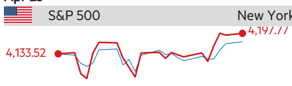
S&P 500	Nasdaq Composite	Dow Jones Ind	FTSE 100	FTSE Eurofirst 300	Nikkei	Hang Seng	FTSE All World $	$ per €	$ per £	¥ per $	£ per €	Oil Brent $ Sep	Gold $
0.14%	0.42%	-0.19%	0.18%	-0.03%	0.90%	1.17%	0.24%	0.093%	-0.161%	0.058%	0.346%	-0.06%	0.07%

Stock Market movements over last 30 days, with the FTSE All-World in the same currency as a comparison

AMERICAS

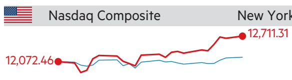
Apr 23 - - (Index / All World)

S&P 500 — New York



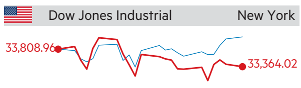
Day 0.14% Month 1.56% Year 7.61%

Nasdaq Composite — New York



Day 0.42% Month 5.30% Year 11.95%

Dow Jones Industrial — New York



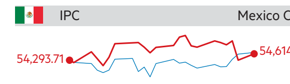
Day -0.19% Month -1.31% Year 6.73%

Apr 23 - May 22 (Index / All World)

S&P/TSX COMP — Toronto

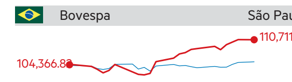
Day 0.27% Month -1.59% Year 0.84%

IPC — Mexico City



Day -0.46% Month -0.18% Year 4.97%

Bovespa — São Paulo

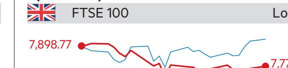


Day -0.09% Month 6.01% Year 1.99%

EUROPE

Apr 23 - May 22 (Index / All World)

FTSE 100 — London

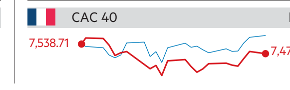


Day 0.18% Month -1.78% Year 5.19%

FTSE Eurofirst 300 — Europe

Day -0.03% Month -0.07% Year 10.03%

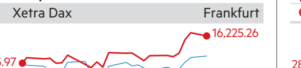
CAC 40 — Paris



Day -0.18% Month -1.30% Year 18.98%

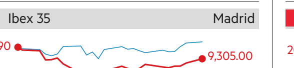
Apr 23 - May 22 (Index / All World)

Xetra Dax — Frankfurt



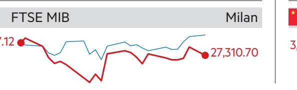
Day -0.32% Month 1.95% Year NaN%

Ibex 35 — Madrid



Day 0.58% Month -1.17% Year 9.67%

FTSE MIB — Milan

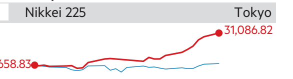


Day -0.76% Month -1.57% Year 13.35%

ASIA

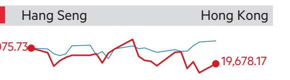
Apr 23 - May 22 (Index / All World)

Nikkei 225 — Tokyo



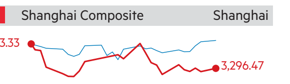
Day 0.90% Month 8.81% Year 16.24%

Hang Seng — Hong Kong



Day 1.17% Month -1.79% Year -4.83%

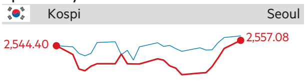
Shanghai Composite — Shanghai



Day 0.39% Month -0.15% Year 4.76%

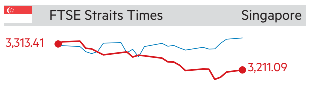
Apr 23 - May 22 (Index / All World)

Kospi — Seoul



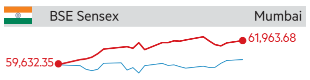
Day 0.76% Month 0.50% Year -3.11%

FTSE Straits Times — Singapore



Day 0.27% Month -3.46% Year -1.04%

BSE Sensex — Mumbai



Day 0.38% Month 3.79% Year 13.97%

Country	Index	Latest	Previous
Argentina	Merval	336501.22	338677.61
Australia	All Ordinaries	7450.70	7471.50
	S&P/ASX 200	7263.30	7279.50
	S&P/ASX 200 Res	6000.80	6004.30
Austria	ATX	3188.07	3161.59
Belgium	BEL 20	3736.57	3736.78
	BEL Mid	9987.91	9955.57
Brazil	IBovespa	110642.20	110744.51
Canada	S&P/TSX 60	1226.22	1222.93
	S&P/TSX Comp	20351.06	20297.09
	S&P/TSX Div Met & Min	1764.03	1759.10
Chile	S&P/CLX IGPA Gen	28997.49	28869.30
China	FTSE A200	10462.76	10383.51
	FTSE B35	9000.71	8988.96
	Shanghai A	3455.48	3441.92
	Shanghai B	289.11	289.07
	Shanghai Comp	3296.47	3283.54
	Shenzhen A	2133.02	2124.78
	Shenzhen B	1172.03	1172.43
Colombia	COLCAP	1261.61	1260.21
Croatia	CROBEX	2013.05	2011.29

Country	Index	Latest	Previous
Cyprus	CSE M&P Gen	68.46	68.68
Czech Republic	PX	1319.33	1316.80
Denmark	OMXC Copenahgen 20	2148.56	2106.51
Egypt	EGX 30	16860.88	16745.54
Estonia	OMX Tallinn	1878.49	1889.15
Finland	OMX Helsinki General	10338.46	10369.32
France	CAC 40	7478.16	7491.96
	SBF 120	5697.38	5706.55
Germany	M-DAX	27584.27	27639.03
	TecDAX	3278.82	3286.40
	XETRA Dax	16223.99	16275.38
Greece	Athens Gen	1201.32	1132.34
	FTSE/ASE 20	2959.46	2767.02
Hong Kong	Hang Seng	19678.17	19450.57
	HS China Enterprise	6693.64	6593.92
	HSCC Red Chip	3980.90	3947.30
Hungary	Bux	46562.45	46587.39
India	BSE Sensex	61963.68	61729.68
	Nifty 500	15504.00	15407.55
Indonesia	Jakarta Comp	6729.65	6700.56
Ireland	ISEQ Overall	8724.32	8686.61
Israel	Tel Aviv 125	1823.96	1823.96

Country	Index	Latest	Previous
Italy	FTSE Italia All-Share	29434.75	29664.81
	FTSE Italia Mid Cap	43026.12	43458.27
	FTSE MIB	27310.70	27520.33
Japan	2nd Section	7228.27	7239.06
	Nikkei 225	31086.82	30808.35
	S&P Topix 150	1881.29	1867.16
	Topix	2175.90	2161.69
Jordan	Amman SE	2483.38	2490.19
Kenya	NSE 20	1467.83	1475.32
Kuwait	KSX Market Index	6633.44	6603.51
Latvia	OMX Riga	1141.42	1137.16
Lithuania	OMX Vilnius	1006.87	1007.75
Luxembourg	LuxX	1484.67	1487.45
Malaysia	FTSE Bursa KLCI	1419.00	1428.54
Mexico	IPC	54048.49	54296.05
Morocco	MASI	10764.97	10746.37
Netherlands	AEX	767.61	767.10
	AEX All Share	1040.98	1040.39
New Zealand	NZX 50	11993.00	12099.74
Nigeria	SE All Share	52187.93	52109.43
Norway	Oslo All Share	1017.37	1006.88
Pakistan	KSE 100	41195.07	41599.19

Country	Index	Latest	Previous
Philippines	Manila Comp	6620.83	6664.55
Poland	Wig	65401.26	64919.22
Portugal	PSI 20	5994.82	6043.08
	PSI General	4580.32	4614.92
Romania	BET Index	12277.34	12290.04
Russia	Micex Index	2436.57	2445.30
	RTX	1245.71	1212.57
Saudi-Arabia	TADAWUL All Share Index	11341.82	11344.40
Singapore	FTSE Straits Times	3211.09	3202.59
Slovakia	SAX	308.72	308.72
Slovenia	SBI TOP	-	-
South Africa	FTSE/JSE All Share	77962.73	78175.82
	FTSE/JSE Res 20	68928.08	69370.38
	FTSE/JSE Top 40	72763.46	72985.41
South Korea	Kospi	2557.08	2537.79
	Kospi 200	336.27	334.23
Spain	IBEX 35	9305.00	9251.50
Sri Lanka	CSE All Share	8611.38	8716.96
Sweden	OMX Stockholm 30	2283.31	2288.37
	OMX Stockholm AS	855.01	856.16
Switzerland	SMI Index	11553.23	11571.16

Country	Index	Latest	Previous
Taiwan	Weighted Pr	16180.89	16174.92
Thailand	Bangkok SET	1528.92	1516.43
Turkey	BIST 100	4477.14	4501.73
UAE	Abu Dhabi General Index	9222.93	9251.11
UK	FT 30	2836.70	2827.00
	FTSE 100	7770.99	7756.87
	FTSE 4Good UK	7105.73	7093.97
	FTSE All Share	4234.14	4228.25
	FTSE techMARK 100	6982.31	6986.07
USA	DJ Composite	11042.61	11040.28
	DJ Industrial	33364.02	33426.63
	DJ Transport	13962.35	13909.54
	DJ Utilities	916.91	914.83
	Nasdaq 100	13841.95	13803.49
	Nasdaq Cmp	12711.31	12657.90
	NYSE Comp	15347.84	15324.32
	S&P 500	4197.85	4191.98
	Wilshire 5000	41434.81	41325.07
Venezuela	IBC	31919.92	31785.42
Vietnam	VNI	1070.64	1067.07

Country	Index	Latest	Previous
Cross-Border	DJ Global Titans ($)	479.76	478.94
	Euro Stoxx 50 (Eur)	4385.69	4395.30
	Euronext 100 ID	1378.99	1380.62
	FTSE 4Good Global ($)	10724.36	10715.68
	FTSE All World ($)	434.29	433.26
	FTSE E300	1856.55	1857.19
	FTSE Eurotop 100	3690.89	3693.60
	FTSE Global 100 ($)	2860.53	2857.68
	FTSE Gold Min ($)	1934.53	1929.75
	FTSE Latibex Top (Eur)	4440.00	4432.20
	FTSE Multinationals ($)	2973.18	2965.25
	FTSE World ($)	791.50	789.92
	FTSEurofirst 100 (Eur)	4966.98	4976.63
	FTSEurofirst 80 (Eur)	5938.57	5947.85
	MSCI ACWI Fr ($)	656.42	655.94
	MSCI All World ($)	2842.76	2840.12
	MSCI Europe (Eur)	1896.72	1885.43
	MSCI Pacific ($)	2777.15	2762.08
	S&P Euro (Eur)	1936.24	1937.81
	S&P Europe 350 (Eur)	1902.73	1902.71
	S&P Global 1200 ($)	3150.26	3145.77
	Stoxx 50 (Eur)	4073.68	4075.35

(c) Closed. (u) Unavaliable. † Correction. ♥ Subject to official recalculation. For more index coverage please see www.ft.com/worldindices. A fuller version of this table is available on the ft.com research data archive.

STOCK MARKET: BIGGEST MOVERS

AMERICA

ACTIVE STOCKS	stock traded m's	close price	Day's change
Tesla	128.2	185.28	5.14
Nvidia	67.2	312.51	-0.13
Amazon.com	42.7	114.50	-1.75
Advanced Micro Devices	42.5	107.56	1.74
Meta Platforms	38.9	250.16	4.52
Microsoft	35.6	320.68	2.34
Apple	34.7	174.34	-0.82
Alphabet	24.0	124.94	2.18
Alphabet	17.9	125.65	2.40
Micron Technology	16.3	66.30	-1.88

BIGGEST MOVERS	Close price	Day's change	Day's chng%
Ups			
Match	33.69	1.85	5.81
Zions Ban Na	28.29	1.52	5.66
Epam Systems	258.93	11.43	4.62
Pfizer	38.17	1.40	3.81
Align Technology	301.54	10.55	3.62
Downs			
Everest Re Ltd	363.31	-13.16	-3.50
Arch Capital Ltd	73.48	-2.54	-3.34
Micron Technology	66.30	-1.88	-2.75
Nike	111.70	-3.06	-2.67
American Airlines	14.44	-0.38	-2.57

Based on the constituents of the S&P500

LONDON

ACTIVE STOCKS	stock traded m's	close price	Day's change
Bt	396.1	147.85	2.90
Shell	219.3	2395.00	-14.00
London Stock Exchange	133.7	8472.00	36.00
Astrazeneca	114.3	12036.00	26.00
Unilever	103.8	4229.00	-42.00
Bp	91.0	481.65	0.25
Rio Tinto	89.4	4936.50	-12.00
Hsbc Holdings	85.8	617.20	6.40
Diageo	79.2	3542.50	-5.50
Barclays	78.1	160.08	0.66

BIGGEST MOVERS	Close price	Day's change	Day's chng%
Ups			
Molten Ventures	287.40	16.60	6.13
Kainos	1299.00	75.00	6.13
Watches Of Switzerland	689.50	28.50	4.31
4imprint	4880.00	180.00	3.83
Diversified Energy	96.35	3.55	3.83
Downs			
Dechra Pharmaceuticals	3174.00	-476.00	-13.04
Chemring	273.00	-9.00	-3.19
Coats	69.80	-2.20	-3.06
Bakkavor	92.40	-2.60	-2.74
Future	871.50	-24.50	-2.73

Based on the constituents of the FTSE 350 index

EURO MARKETS

ACTIVE STOCKS	stock traded m's	close price	Day's change
Novo Nordisk B A/s	303.3	158.42	4.00
Novartis N	303.0	93.98	0.75
Nestle N	285.7	116.35	-0.89
Roche Gs	268.7	294.99	-1.91
Unicredit	253.0	19.10	0.09
Intesa Sanpaolo	198.0	2.34	-0.08
Asml Holding	195.0	642.20	-1.20
Bnp Paribas Act.a	156.4	57.01	-2.84
Zurich Insurance N	156.0	441.45	0.51
Stellantis	130.7	15.32	-0.11

BIGGEST MOVERS	Close price	Day's change	Day's chng%
Ups			
Adyen	1534.60	79.80	5.49
Dassault Systemes	39.69	1.76	4.64
Dsv A/s	181.61	4.83	2.73
Novo Nordisk B A/s	158.42	4.00	2.59
Orange	11.50	0.18	1.59
Downs			
Bnp Paribas Act.a	57.01	-2.84	-4.75
Intesa Sanpaolo	2.34	-0.08	-3.12
Essilorluxottica	180.06	-3.36	-1.83
Atlas Copco Ab Ser. B	11.83	-0.20	-1.68
Neste	37.35	-0.60	-1.58

Based on the constituents of the FTSEurofirst 300 Eurozone index

TOKYO

ACTIVE STOCKS	stock traded m's	close price	Day's change
Mitsubishi Ufj Fin,.	644.9	923.50	-3.40
Tokyo Electron	577.3	18660.00	130.00
Toyota Motor	498.6	1950.00	-9.50
Renesas Electronics	485.7	2083.00	-41.00
Fast Retailing Co.,	470.1	34070.00	-20.00
Advantest	452.1	14330.00	420.00
Sony	443.7	13610.00	20.00
Tokio Marine Holdings,.	421.1	3024.00	163.50
Sumitomo Mitsui Fin,.	343.5	5650.00	10.00
Japan Tobacco .	313.2	3103.00	57.00

BIGGEST MOVERS	Close price	Day's change	Day's chng%
Ups			
Fujikura	1036.00	73.00	7.58
Tokio Marine Holdings,.	3024.00	163.50	5.72
Kawasaki Heavy Industries,	2932.00	105.00	3.71
Keisei Electric Railway Co.,	5430.00	190.00	3.63
Otsuka Holdings Co.,	5088.00	167.00	3.39
Downs			
Daiichi Sankyo ,	4875.00	-96.00	-1.93
Renesas Electronics	2083.00	-41.00	-1.93
Okuma	6410.00	-90.00	-1.38
Shizuoka Fin .	1018.00	-13.00	-1.26
Mitsubishi Materials	2368.00	-30.00	-1.25

Based on the constituents of the Nikkei 225 index

UK MARKET WINNERS AND LOSERS

FTSE 100	May 22 price(p)	%Chg week	%Chg ytd
Winners			
Rolls-royce Holdings	157.30	8.4	68.3
Dcc	5022.00	7.9	23.1
Sage	863.80	6.3	15.9
Standard Chartered	653.20	5.5	4.9
Scottish Mortgage Investment Trust	655.20	5.1	-9.5
Ashtead	4996.00	5.0	5.8
Informa	729.00	4.0	17.9
3i	1946.00	3.7	45.1
Melrose Industries	480.50	3.5	19.1
Experian	2830.00	3.4	0.6
Flutter Entertainment	16725.00	3.3	48.1
Barclays	160.08	3.3	0.9
Losers			
Vodafone	81.65	-9.3	-3.0
Jd Sports Fashion	160.40	-8.1	29.2
Burberry	2331.00	-7.7	14.5
Ocado	403.40	-6.4	-
Croda Int	6372.00	-6.1	-3.8
British Land	356.40	-5.0	-9.8
National Grid	1105.00	-4.8	10.5
Imperial Brands	1789.50	-4.5	-
Frasers	748.50	-4.1	5.6
Bt	147.85	-3.8	31.9
Severn Trent	2812.00	-3.7	6.0
Endeavour Mining	2006.00	-3.4	14.5

FTSE 250	May 22 price(p)	%Chg week	%Chg ytd
Winners			
Aston Martin Lagonda Global Holdings	265.80	27.9	72.5
Dowlais	143.50	11.6	-
Auction Technology	747.00	11.5	-0.7
Asos	443.50	10.7	-
Keller	702.00	10.0	-12.3
Carnival	787.80	9.5	33.4
4imprint	4880.00	8.7	10.5
Diversified Energy	96.35	8.0	-
Allianz Technology Trust	248.00	7.8	18.1
Molten Ventures	287.40	7.7	-
Mitchells & Butlers	209.80	7.6	52.1
Genuit	329.00	7.0	13.5
Losers			
Future	871.50	-16.4	-
Dechra Pharmaceuticals	3174.00	-14.2	26.1
C&c	134.80	-12.4	-
Int Distributions Services	201.20	-11.9	-5.4
Capricorn Energy	192.40	-11.5	-
Energean	1099.00	-11.2	-15.7
Watches Of Switzerland	689.50	-9.3	-
Tritax Eurobox	62.20	-7.6	1.3
Telecom Plus	1698.00	-6.4	-22.6
Supermarket ome Reit	82.70	-5.5	-
Centamin	103.90	-4.8	-7.7
Digital 9 Infrastructure	65.80	-4.6	-

FTSE SmallCap	May 22 price(p)	%Chg week	%Chg ytd
Winners			
Luceco	129.40	13.5	31.8
Metro Bank Holdings	104.36	11.0	-
Wanton	232.00	9.2	-
Oxford Biomedica	444.50	7.8	0.5
Life Science Reit	75.40	6.2	4.3
Abrdn Eur Logistics ome	80.50	6.1	17.5
De La Rue	42.40	5.9	-
Alfa Fin Software Holdings	150.50	5.6	-9.0
Trustpilot	85.60	5.2	-
Tyman	268.00	4.9	18.7
Cqs Natural Resources Growth And ome	181.00	4.6	-7.9
Schroder Japan Trust	222.00	4.2	8.3
Losers			
On The Beach	103.00	-19.2	-
Ao World	65.00	-12.7	25.0
Costain	50.60	-9.6	28.5
Marston's	33.65	-9.4	-
Hostelworld	131.00	-8.4	13.7
Seraphim Space Investment Trust	40.85	-7.2	-
Greencore	76.20	-7.1	18.8
Card Factory	92.40	-7.0	18.2
Ct Private Equity Trust	493.00	-6.6	16.7
Esken	5.00	-6.0	-2.0
Zotefoams	368.00	-5.6	8.2
Norcros	170.00	-5.6	-5.6

Industry Sectors	May 22 price(p)	%Chg week	%Chg ytd
Winners			
Automobiles & Parts	1930.74	13.6	29.7
Industrial Transportation	3612.99	3.6	4.3
Software & Computer Services	2014.72	3.5	14.0
General Retailers	3917.27	3.2	16.7
Aerospace & Defense	6549.66	2.7	27.6
Travel & Leisure	7914.11	2.2	27.5
Construction & Materials	8234.49	2.1	19.9
Banks	3658.18	1.8	11.3
Support Services	10594.82	1.6	6.6
Nonlife Insurance	3269.57	1.3	-2.4
Industrial Engineering	14637.05	1.3	5.8
Life Insurance	7050.36	1.2	-0.1
Losers			
Personal Goods	32796.43	-7.6	6.4
Mobile Telecommunications	2236.94	-6.8	4.9
Gas Water & Multiutilities index	6226.88	-4.1	9.7
Chemicals	11061.71	-4.1	-5.9
Mining	10991.19	-3.4	-1.2
Food & Drug Retailers	4357.01	-1.9	5.7
Tobacco	29449.86	-1.9	-
Real Estate Investment Trusts	2238.57	-1.3	0.1
Household Goods	11840.13	-0.9	19.5
Pharmaceuticals & Biotech.	22067.75	-0.7	5.1
Electricity	11364.61	-0.7	6.7
Food Producers	6552.33	-0.6	15.7

Based on last week's performance. †Price at suspension.

CURRENCIES

May 22	Currency	DOLLAR Closing Mid	DOLLAR Day's Change	EURO Closing Mid	EURO Day's Change	POUND Closing Mid	POUND Day's Change
Argentina	Argentine Peso	234.3740	1.6495	253.1009	2.0605	291.0791	1.6280
Australia	Australian Dollar	1.5052	0.0031	1.6255	0.0051	1.8694	0.0011
Bahrain	Bahraini Dinar	0.3770	-	0.4071	0.0005	0.4682	-0.0007
Bolivia	Bolivian Boliviano	6.9100	-	7.4621	0.0083	8.5818	-0.0125
Brazil	Brazilian Real	4.9646	-0.0275	5.3612	-0.0238	6.1657	-0.0432
Canada	Canadian Dollar	1.3515	0.0005	1.4594	0.0022	1.6784	-0.0018
Chile	Chilean Peso	799.5500	1.9850	863.4357	3.1006	992.9955	1.0238
China	Chinese Yuan	7.0303	0.0071	7.5920	0.0161	8.7312	-0.0039
Colombia	Colombian Peso	4529.1600	0.6050	4891.0494	6.0854	5624.9582	-7.4358
Costa Rica	Costa Rican Colon	538.0150	-1.1950	581.0035	-0.6435	668.1839	-2.4586
Czech Republic	Czech Koruna	21.9447	-0.0976	23.6981	-0.0790	27.2540	-0.1611
Denmark	Danish Krone	6.8963	-0.0086	7.4473	-0.0010	8.5647	-0.0232
Egypt	Egyptian Pound	30.8981	0.2195	33.3669	0.2738	38.3737	0.2171
Hong Kong	Hong Kong Dollar	7.8279	0.0108	8.4533	0.0210	9.7217	-0.0007
Hungary	Hungarian Forint	346.6062	-1.7994	374.3007	-1.5251	430.4651	-2.8644
India	Indian Rupee	82.8275	0.1612	89.4456	0.2733	102.8670	0.0509
Indonesia	Indonesian Rupiah	14890.0000	-35.0000	16079.7556	-19.8818	18492.5604	-70.4405
Israel	Israeli Shekel	3.6613	0.0111	3.9538	0.0164	4.5471	0.0072
Japan	Japanese Yen	138.5850	0.0800	149.6582	0.2526	172.1147	-0.1510
..One Month		138.5843	0.0787	149.6577	0.2517	172.1139	-0.1524
..Three Month		138.5831	0.0761	149.6569	0.2499	172.1125	-0.1552
..One Year		138.5776	0.0654	149.6526	0.2413	172.1139	-0.1604
Kenya	Kenyan Shilling	137.8000	0.3000	148.8105	0.4889	171.1397	0.1241
Kuwait	Kuwaiti Dinar	0.3074	0.0001	0.3319	0.0005	0.3817	-0.0004
Malaysia	Malaysian Ringgit	4.5480	0.0095	4.9114	0.0157	5.6484	0.0036
Mexico	Mexican Peso	17.8830	0.1760	19.3119	0.2113	22.2097	0.1866
New Zealand	New Zealand Dollar	1.5936	0.0006	1.7210	0.0026	1.9792	-0.0021
Nigeria	Nigerian Naira	461.5000	-	498.3748	0.5537	573.1567	-0.8340
Norway	Norwegian Krone	10.8964	0.0220	11.7670	0.0368	13.5327	0.0077
Pakistan	Pakistani Rupee	285.0000	-	307.7721	0.3420	353.9537	-0.5151
Peru	Peruvian Nuevo Sol	3.6935	-0.0019	3.9886	0.0024	4.5871	-0.0090
Philippines	Philippine Peso	55.8300	0.1550	60.2909	0.2342	69.3377	0.0919
Poland	Polish Zloty	4.1710	-0.0388	4.5042	-0.0368	5.1801	-0.0557
Romania	Romanian Leu	4.6033	-0.0125	4.9712	-0.0079	5.7171	-0.0238
Russia	Russian Ruble	80.1000	-0.0250	86.5001	0.0691	99.4796	-0.1759
Saudi Arabia	Saudi Riyal	3.7500	-0.0004	4.0496	0.0041	4.6573	-0.0072
Singapore	Singapore Dollar	1.3469	-0.0004	1.4545	0.0012	1.6727	-0.0029
South Africa	South African Rand	19.2588	-0.2150	20.7976	-0.2088	23.9183	-0.3022
South Korea	South Korean Won	1318.2000	-8.4500	1423.5269	-7.5334	1637.1293	-12.8919
Sweden	Swedish Krona	10.5693	0.0190	11.4138	0.0332	13.1264	0.0046
Switzerland	Swiss Franc	0.8990	-0.0031	0.9709	-0.0023	1.1166	-0.0055
Taiwan	New Taiwan Dollar	30.6765	-0.0050	33.1276	0.0314	38.0985	-0.0617
Thailand	Thai Baht	34.4525	0.0725	37.2053	0.1195	42.7880	0.0279
Tunisia	Tunisian Dinar	3.0925	0.0054	3.3395	0.0096	3.8406	0.0012
Turkey	Turkish Lira	19.8338	0.0217	21.4185	0.0473	24.6324	-0.0088
United Arab Emirates	UAE Dirham	3.6722	-0.0001	3.9656	0.0043	4.5607	-0.0068
United Kingdom	Pound Sterling	0.8052	0.0012	0.8695	0.0022	-	-
..One Month		0.8053	0.0012	0.8694	0.0022	-	-
..Three Month		0.8054	0.0012	0.8692	0.0022	-	-
..One Year		0.8054	0.0012	0.8683	0.0022	-	-
United States	United States Dollar	-	-	1.0799	0.0012	1.2419	-0.0018
..One Month		-	-	1.0797	-0.1639	1.2420	-0.0018
..Three Month		-	-	1.0794	-0.1639	1.2421	-0.0018
..One Year		-	-	1.0781	-0.1639	1.2422	-0.0018
Vietnam	Vietnamese Dong	23433.0000	-30.5000	25305.3726	-4.8036	29102.5078	-80.2581
European Union	Euro	0.9260	-0.0010	-	-	1.1501	-0.0030
..One Month		0.9258	-0.0010	-	-	1.1499	-0.0030
..Three Month		0.9255	-0.0010	-	-	1.1498	-0.0030
..One Year		0.9242	-0.0011	-	-	1.1488	-0.0030

Rates are derived from WM Reuters Spot Rates and MorningStar (latest rates at time of production). Some values are rounded. Currency redenominated by 1000. The exchange rates printed in this table are also available at www.FT.com/marketsdata

FTSE ACTUARIES SHARE INDICES

UK SERIES www.ft.com/equities

Produced in conjunction with the Institute and Faculty of Actuaries

	£ Strlg May 22	Day's chge%	Euro Index	£ Strlg May 19	£ Strlg May 18	Year ago	Div yield%	Cover	P/E ratio	X/D adj	Total Return
FTSE 100 (100)	7770.99	0.18	6964.05	7756.87	7742.30	7389.98	3.64	1.87	14.68	142.30	8132.91
FTSE 250 (250)	19273.34	-0.08	17271.99	19289.10	19298.25	19835.95	3.26	0.83	37.09	248.22	16262.14
FTSE 250 ex Inv Co (170)	19908.84	-0.15	17841.50	19938.40	19957.51	20542.69	3.37	1.12	26.56	263.33	17146.88
FTSE 350 (350)	4278.13	0.14	3833.89	4271.94	4265.34	4116.05	3.59	1.74	16.05	75.09	8878.45
FTSE 350 ex Investment Trusts (267)	4228.06	0.15	3789.02	4221.92	4215.40	4054.06	3.63	1.83	15.07	75.73	4536.43
FTSE 350 Higher Yield (135)	3600.36	0.07	3226.50	3597.85	3591.10	3610.13	5.00	1.76	11.37	84.71	8480.86
FTSE 350 Lower Yield (215)	4540.15	0.22	4068.70	4530.23	4524.73	4187.70	2.19	1.69	27.09	52.76	5659.29
FTSE SmallCap (227)	6254.25	-0.09	5604.81	6259.90	6233.43	6605.35	3.56	-0.48	-58.41	88.20	10684.22
FTSE SmallCap ex Inv Co (119)	5062.14	-0.14	4536.49	5069.02	5060.95	5569.21	3.71	1.52	17.72	74.74	8995.72
FTSE All-Share (577)	4234.14	0.14	3794.47	4228.25	4221.45	4083.84	3.59	1.69	16.54	73.98	8872.78
FTSE All-Share ex Inv Co (386)	4150.11	0.14	3719.16	4144.22	4137.82	3987.28	3.63	1.82	15.09	74.17	4520.82
FTSE All-Share ex Multinationals (516)	1106.37	0.25	822.79	1103.60	1102.51	1139.54	3.99	1.24	20.17	17.80	2398.05
FTSE Fledgling (78)	11652.06	-0.04	10442.11	11656.60	11649.05	12789.32	3.20	-1.25	-24.92	140.95	25597.35
FTSE Fledgling ex Inv Co (30)	15776.41	-0.36	14138.19	15833.17	15803.52	18089.65	3.47	6.21	4.64	234.27	33712.82
FTSE All-Small (305)	4361.80	-0.09	3908.87	4365.61	4348.04	4615.71	3.54	-0.52	-54.23	61.01	9556.13
FTSE All-Small ex Inv Co (149)	3813.26	-0.14	3417.29	3818.79	3812.66	4201.23	3.70	1.70	15.93	56.29	8581.86
FTSE AIM All-Share (720)	808.21	-0.09	724.29	808.97	809.94	956.64	1.77	1.67	33.77	4.95	956.10
FTSE All-Share Technology (18)	2107.71	0.21	1803.39	2103.20	2088.69	1771.52	1.81	1.54	35.75	15.02	3077.23
FTSE All-Share Telecommunications (6)	1436.74	-0.46	1229.30	1443.36	1429.05	1968.87	7.33	1.33	10.27	1.03	2208.78
FTSE All-Share Health Care (14)	15418.30	-0.06	13192.11	15428.10	15397.14	14887.63	2.31	1.15	37.72	215.94	14487.79
FTSE All-Share Financials (254)	4844.77	0.64	4145.25	4813.85	4798.73	4431.54	3.89	1.55	16.55	122.63	5533.34
FTSE All-Share Real Estate (54)	823.38	0.25	736.98	821.36	816.28	1070.63	4.35	0.12	198.16	14.06	884.19
FTSE All-Share Consumer Discretionary (82)	5224.81	0.40	4470.42	5203.77	5230.49	4599.14	2.17	1.32	34.99	48.85	5597.16
FTSE All-Share Consumer Staples (22)	19115.46	-0.18	16355.45	19149.49	19134.71	18893.86	4.08	1.64	14.99	303.56	17871.45
FTSE All-Share Industrials (84)	6956.82	0.03	5952.35	6954.66	6951.23	5987.31	2.23	1.15	39.08	77.16	8151.94
FTSE All-Share Basic Materials (21)	7663.72	0.10	6557.18	7656.19	7639.57	8963.32	6.65	3.43	4.39	247.51	10766.97
FTSE All-Share Energy (14)	8549.10	-0.35	7314.73	8579.28	8540.19	8169.97	3.98	1.74	14.42	175.49	10608.43
FTSE All-Share Utilities (8)	9280.91	0.12	7940.87	9269.78	9254.14	9808.85	4.22	1.10	21.61	42.27	14237.97
FTSE All-Share Software and Computer Services (16)	2282.63	0.23	1953.05	2277.40	2261.57	1906.88	1.79	1.56	35.62	15.79	3525.09
FTSE All-Share Technology Hardware and Equipment (2)	4141.25	-0.87	3543.31	4177.51	4165.84	4800.81	3.16	0.65	48.76	89.37	5483.38
FTSE All-Share Telecommunications Equipment (1)	413.10	0.43	353.45	411.31	409.52	512.80	3.40	2.14	13.72	9.21	604.55
FTSE All-Share Telecommunications Service Providers (5)	2233.55	-0.49	1911.06	2244.51	2221.85	3068.10	7.47	1.31	10.19	0.00	3128.30
FTSE All-Share Health Care Providers (3)	11406.56	-0.38	9759.61	11449.63	11459.29	8690.63	0.51	7.04	27.82	0.00	10587.13
FTSE All-Share Medical Equipment and Services (2)	6131.73	-0.53	5246.39	6164.10	6217.05	6070.67	2.46	1.16	35.00	92.56	6023.00
FTSE All-Share Pharmaceuticals and Biotechnology (9)	22005.80	-0.03	18828.47	22013.32	21955.31	21264.28	2.32	1.13	38.03	310.15	18620.65
FTSE All-Share Banks (12)	3608.97	0.98	3087.89	3573.80	3578.12	3039.07	4.46	2.67	8.40	136.68	3316.83
FTSE All-Share Finance and Credit Services (8)	11637.58	0.50	9957.28	11579.46	11499.20	10126.18	1.81	1.87	29.61	148.60	15855.54
FTSE All-Share Investment Banking and Brokerage Services (31)	9308.38	0.71	7964.37	9242.86	9158.16	8595.42	4.80	2.38	8.75	177.30	13419.07
FTSE All-Share Closed End Investments (191)	11474.31	0.10	9817.58	11463.26	11433.50	11726.44	2.84	-1.04	-33.88	129.51	7278.37
FTSE All-Share Life Insurance (6)	7171.86	0.61	6136.34	7128.47	7060.66	6719.55	4.48	0.57	38.86	215.96	9055.30
FTSE All-Share Nonlife Insurance (6)	3688.00	1.06	3155.50	3649.39	3617.98	3452.57	4.55	1.24	17.76	56.37	7978.63
FTSE All-Share Real Estate Investment and Services (10)	2169.48	0.62	1856.24	2156.12	2155.08	2497.20	2.27	1.67	26.40	21.39	6559.90
FTSE All-Share Real Estate Investment Trusts (44)	2030.59	0.18	1737.40	2027.04	2012.32	2700.35	4.74	-0.02	-871.88	37.49	3146.94
FTSE All-Share Automobiles and Parts (3)	1940.64	2.18	1660.44	1899.29	1817.26	2004.34	0.22	-26.35	-17.24	0.00	2018.93
FTSE All-Share Consumer Services (1)	3680.88	-0.09	3149.41	3684.18	3672.64	2821.12	1.41	1.37	51.62	36.27	4723.25
FTSE All-Share Household Goods and Home Construction (11)	9867.57	-0.17	8442.83	9884.82	10076.14	10688.20	6.96	1.95	7.36	266.65	9137.28
FTSE All-Share Leisure Goods (2)	26336.74	0.52	22534.08	26199.41	26305.79	18236.58	3.41	1.14	25.63	666.68	30222.29
FTSE All-Share Personal Goods (4)	28152.40	1.76	24087.58	27665.56	28789.79	22999.04	2.01	3.04	16.39	21.42	22159.87
FTSE All-Share Media (10)	9989.71	-0.15	8547.33	10004.28	9992.87	9206.35	2.34	2.01	21.27	128.39	7115.74
FTSE All-Share Retailers (22)	2166.34	0.50	1853.55	2155.60	2197.38	1987.53	2.57	3.17	12.26	8.10	2839.54
FTSE All-Share Travel and Leisure (29)	7704.77	1.08	6592.31	7622.41	7629.47	6395.57	0.65	-7.14	-21.42	24.53	7997.60
FTSE All-Share Beverages (5)	27602.14	-0.13	23616.77	27636.93	27584.35	27476.69	2.22	2.33	19.36	220.38	22315.44
FTSE All-Share Food Producers (8)	6714.00	0.19	5744.59	6701.46	6723.28	6296.61	2.26	2.13	20.77	2.98	6542.89
FTSE All-Share Tobacco (2)	29449.91	0.38	25197.75	29339.40	29243.60	35910.95	8.17	1.58	7.76	675.92	28602.85
FTSE All-Share Construction and Materials (15)	8715.96	0.12	7457.50	8705.80	8683.42	7201.68	2.90	0.53	65.23	176.01	10860.34
FTSE All-Share Aerospace and Defense (8)	6867.28	0.17	5875.74	6855.82	6886.97	4847.17	1.79	0.20	277.76	74.85	8469.93
FTSE All-Share Electronic and Electrical Equipment (11)	12254.76	-1.03	10485.35	12382.36	12301.20	10397.80	1.47	2.32	29.32	72.60	12214.57
FTSE All-Share General Industrials (7)	5189.81	-0.11	4440.47	5195.32	5189.03	4815.49	3.37	1.32	22.42	93.04	6993.90
FTSE All-Share Industrial Engineering (6)	16155.96	0.03	13823.26	16150.69	16010.20	14564.74	1.94	2.38	21.65	210.47	21977.55
FTSE All-Share Industrial Support Services (29)	10191.86	0.23	8720.30	10168.76	10183.15	9532.67	2.01	1.61	30.74	74.89	11827.96
FTSE All-Share Industrial Transportation (8)	5423.78	0.25	4640.66	5410.08	5398.63	4633.70	2.12	0.87	53.95	16.99	5705.34
FTSE All-Share Industrial Materials (1)	18403.43	-2.90	598.20	18953.54	18503.45	14502.71	1.85	1.34	40.41	231.04	23540.22
FTSE All-Share Industrial Metals and Mining (8)	6784.18	0.05	5804.64	6780.54	6761.94	8010.15	7.20	3.54	3.92	242.91	10765.91
FTSE All-Share Precious Metals and Mining (5)	10438.53	-0.54	8878.53	10433.59	10362.34	10175.73	3.61	1.61	17.23	131.63	7412.57
FTSE All-Share Chemicals (7)	12268.84	0.81	10497.39	12170.24	12234.50	14117.81	2.89	1.77	19.58	100.06	12420.00
FTSE All-Share Oil. Gas and Coal (13)	8299.06	-0.35	7100.79	8328.35	8290.41	7929.21	3.98	1.74	14.41	170.38	10680.11
FTSE Sector Indices											
Non Financials (323)	**5135.42**	**-0.01**	**4602.16**	**5135.98**	**5130.06**	**5028.19**	**3.49**	**1.73**	**16.53**	**77.75**	**9447.29**

Hourly movements	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	High/day	Low/day
FTSE 100	7756.98	7779.58	7779.17	7773.75	7758.96	7761.80	7750.90	7764.41	7768.08	7783.38	7750.57
FTSE 250	19289.12	19302.56	19303.36	19289.92	19259.47	19268.29	19253.62	19253.05	19262.51	19311.61	19241.09
FTSE SmallCap	6263.34	6263.11	6266.14	6266.27	6261.52	6258.60	6258.75	6254.97	6256.29	6267.93	6253.66
FTSE All-Share	4228.35	4239.09	4238.97	4236.09	4228.33	4229.85	4224.43	4230.53	4232.51	4241.04	4224.43

Time of FTSE 100 Day's high:07:56:30 Day's Low12:59:45 FTSE 100 2010/11 High: 8014.31(20/02/2023) Low: 7335.40(17/03/2023)
Time of FTSE All-Share Day's high:08:48:00 Day's Low12:45:00 FTSE 100 2010/11 High: 4377.36(16/02/2023) Low: 4007.66(17/03/2023)

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FT 30 INDEX

	May 22	May 19	May 18	May 17	May 16	Yr Ago	High	Low
FT 30	2836.70	2827.00	2824.50	2824.90	2828.20	0.00	2895.30	2454.10
FT 30 Div Yield	-	-	-	-	-	0.00	3.93	2.74
P/E Ratio net	-	-	-	-	-	0.00	19.44	14.26

FT 30 hourly changes

8	9	10	11	12	13	14	15	16	High	Low
2827	2840.5	2840.4	2843.7	2839.7	2839.3	2832.9	2833.5	2835.2	2844.4	2827.0

FT30 constituents and recent additions/deletions can be found at www.ft.com/ft30

FT WILSHIRE 5000 INDEX SERIES

	May 19		May 19
FT Wilshire 5000	42184.98	FT Wilshire Mid Cap	5391.41
FT Wilshire 2500	5411.43	FT Wilshire Small Cap	4843.41
FT Wilshire Mega Cap	5508.57	FT Wilshire Micro Cap	4465.70
FT Wilshire Large Cap	5490.34		

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FTSE SECTORS: LEADERS & LAGGARDS

Year to date percentage changes

Automobiles & Parts	29.70	Software & Comp Serv	9.72	Oil & Gas	1.78
Aerospace & Defense	27.66	Utilities	9.00	Personal Goods	1.58
Fixed Line Telecomms	23.32	Health Care Eq & Srv	8.78	FTSE SmallCap Index	0.23
Travel & Leisure	23.07	Media	8.22	Beverages	31.66
Electronic & Elec Eq	20.19	Electricity	6.51	Life Insurance	-0.01
Construct & Material	19.82	Real Est Invest & Se	6.38	Real Est Invest & Tr	-0.23
Consumer Services	15.76	Support Services	6.25	Consumer Goods	-0.78
Household Goods & Ho	15.34	Financials	5.69	Equity Invest Instr	-0.93
General Retailers	14.85	Health Care	5.19	Beverages	-1.26
Food Producers	14.33	Technology	5.04	Nonlife Insurance	-2.12
Leisure Goods	14.18	Pharmace & Biotech	4.96	Mobile Telecomms	-2.92
Financial Services	13.20	Telecommunications	4.78	Chemicals	-5.19
Food & Drug Retailer	12.60	Industrial Metals &	4.49	Oil Equipment & Serv	-8.83
Industrials	12.43	FTSE 100 Index	4.28	Industrial Transport	-9.44
Banks	11.18	FTSE All{HY-}Share Index	3.90	Tobacco	-17.38
Industrial Eng	10.09	NON FINANCIALS Index	3.24	Basic Materials	-17.85
Gas Water & Multi	9.92	FTSE 250 Index	2.23	Mining	-19.18
		Oil & Gas Producers	1.85	Tech Hardware & Eq	-19.81

FTSE GLOBAL EQUITY INDEX SERIES

May 22 Regions & countries	No of stocks	US $ indices	Day %	Mth %	YTD %	Total retn	YTD %	Gr Div Yield
FTSE Global All Cap	9497	733.61	0.1	0.0	7.8	1189.45	8.9	2.2
FTSE Global All Cap	9497	733.61	0.1	0.0	7.8	1189.45	8.9	2.2
FTSE Global Large Cap	1936	665.43	0.1	0.6	9.4	1112.47	10.6	2.2
FTSE Global Mid Cap	2226	914.14	0.0	-1.5	3.5	1393.54	4.4	2.2
FTSE Global Small Cap	5335	932.69	-0.3	-1.4	3.5	1358.12	4.3	2.2
FTSE All-World	4162	433.26	0.1	0.2	8.3	744.06	9.4	2.2
FTSE World	2656	789.92	0.1	0.4	9.1	1820.92	10.2	2.2
FTSE Global All Cap ex UNITED KINGDOM In	9216	774.02	0.0	0.1	7.9	1230.44	8.9	2.2
FTSE Global All Cap ex USA	7706	521.96	0.4	-0.9	6.7	943.77	8.3	3.2
FTSE Global All Cap ex JAPAN	8075	764.06	0.0	-0.2	7.8	1249.54	8.8	2.2
FTSE Global All Cap ex Eurozone	8853	771.66	0.0	0.2	7.3	1222.95	8.3	2.2
FTSE Developed	2147	725.75	0.1	0.4	9.2	1184.89	10.3	2.1
FTSE Developed All Cap	5778	752.11	0.1	0.2	8.7	1209.58	9.7	2.1
FTSE Developed Large Cap	815	687.50	0.2	0.8	10.5	1142.72	11.7	2.1
FTSE Developed Europe Large Cap	205	424.15	0.9	-1.3	12.0	859.61	14.5	3.1
FTSE Developed Europe Mid Cap	346	625.69	0.7	-1.6	10.5	1092.76	12.0	3.0
FTSE Dev Europe Small Cap	738	853.95	0.8	-1.4	6.7	1435.24	8.5	3.1
FTSE North America Large Cap	234	911.37	-0.1	1.4	10.9	1381.00	11.7	1.6
FTSE North America Mid Cap	413	1113.06	-0.3	-1.9	1.9	1560.20	2.5	1.8
FTSE North America Small Cap	1320	1091.43	-0.7	-1.5	2.8	1465.18	3.4	1.7
FTSE North America	647	589.13	-0.1	0.8	9.1	912.74	9.9	1.7
FTSE Developed ex North America	1500	284.60	0.8	-0.5	9.4	555.53	11.3	3.0
FTSE Japan Large Cap	175	407.33	0.3	3.3	9.8	607.25	11.2	2.4
FTSE Japan Mid Cap	339	563.08	0.3	2.7	6.4	798.07	7.8	2.5
FTSE Global wi JAPAN Small Cap	908	618.25	0.0	0.9	4.0	911.45	5.5	2.7
FTSE Japan	514	167.08	0.3	3.2	9.1	278.96	10.5	2.4
FTSE Asia Pacific Large Cap ex Japan	1123	680.50	0.1	-1.9	1.3	1253.78	2.1	3.2
FTSE Asia Pacific Mid Cap ex Japan	838	982.36	0.5	-1.9	2.1	1747.14	2.8	3.2
FTSE Asia Pacific Small Cap ex Japan	2095	552.21	0.5	-2.4	3.4	951.85	4.1	2.9
FTSE Asia Pacific Ex Japan	1961	542.82	0.2	-1.9	1.4	1063.02	2.2	3.2
FTSE Emerging All Cap	3719	711.38	-0.3	-1.4	1.0	1254.41	1.9	3.6
FTSE Emerging Large Cap	1121	654.90	-0.5	-1.4	0.7	1161.14	1.6	3.6
FTSE Emerging Mid Cap	894	1035.95	0.0	-1.8	1.3	1843.12	2.6	3.7
FTSE Emerging Small Cap	1704	775.09	0.1	-1.0	2.9	1305.63	3.7	3.3
FTSE Emerging Europe	147	121.34	0.2	-7.5	-5.6	258.81	-4.0	3.3
FTSE Latin America All Cap	251	760.38	-0.4	3.8	8.9	1555.20	11.6	9.0
FTSE Middle East and Africa All Cap	330	698.47	0.0	-2.1	-3.6	1307.31	-1.6	3.6
FTSE Global wi UNITED KINGDOM All Cap In	281	338.38	0.4	-1.6	7.7	705.69	9.6	3.6
FTSE Global wi USA All Cap	1791	1006.41	-0.2	0.7	8.6	1469.49	9.3	1.6
FTSE Europe All Cap	1471	476.56	0.8	-1.4	11.1	925.66	13.3	3.1
FTSE Eurozone All Cap	644	472.10	0.7	-2.0	14.0	909.33	16.2	3.0
FTSE EDHEC-Risk Efficient All-World	4162	475.73	0.1	-1.8	2.7	759.17	3.8	2.7
FTSE EDHEC-Risk Efficient Developed Europe	551	343.24	0.7	-2.4	9.4	615.25	11.4	3.1
Oil & Gas	133	385.67	0.5	-6.1	-5.6	808.20	-3.9	4.9
Oil & Gas Producers	88	387.94	0.6	-5.8	-4.7	836.07	-2.9	5.2

May 22 Sectors	No of stocks	US $ indices	Day %	Mth %	YTD %	Total retn	YTD %	Gr Div Yield
Oil Equipment & Services	25	254.54	0.3	-7.5	-8.4	481.68	-6.9	4.8
Basic Materials	404	600.66	0.3	-5.5	0.5	1127.21	2.1	4.2
Chemicals	201	815.64	0.5	-3.0	4.6	1466.15	6.0	3.2
Forestry & Paper	19	236.17	1.2	-0.8	-6.3	489.61	-4.2	4.2
Industrial Metals & Mining	104	495.49	-0.6	-8.3	0.2	967.45	1.9	4.7
Mining	80	931.14	0.3	-8.0	-4.7	1857.11	-2.7	5.6
Industrials	810	519.03	0.3	-0.3	6.4	837.58	7.5	2.1
Construction & Materials	163	622.13	0.5	1.8	11.7	1060.89	13.0	2.1
Aerospace & Defense	36	933.92	-0.3	-3.9	3.2	1469.24	3.9	1.5
General Industrials	78	260.26	0.1	1.1	9.1	466.83	10.5	2.4
Electronic & Electrical Equipment	158	649.78	0.5	0.6	8.4	940.56	9.0	1.5
Industrial Engineering	159	1038.14	0.9	-0.1	5.6	1672.67	6.8	2.1
Industrial Transportation	129	940.03	-0.1	-2.7	4.2	1554.39	5.6	3.4
Support Services	87	527.44	0.3	0.7	4.4	791.45	5.1	1.6
Consumer Goods	562	585.68	0.2	-0.7	8.9	999.22	10.2	2.4
Automobiles & Parts	132	516.92	0.8	0.1	18.6	851.41	20.7	2.3
Beverages	71	808.30	0.3	-0.2	4.3	1387.74	5.1	2.2
Food Producers	137	753.40	0.3	-0.6	4.5	1320.05	6.1	2.4
Household Goods & Home Construction	61	577.48	0.0	1.9	7.5	986.87	8.9	2.5
Leisure Goods	54	262.72	-0.3	2.4	14.4	374.41	15.1	1.2
Personal Goods	94	1020.67	-0.4	-3.1	10.4	1586.44	11.2	1.7
Tobacco	13	933.07	0.5	-5.9	-6.5	2727.81	-5.0	6.7
Health Care	337	731.85	0.6	-1.3	0.5	1178.06	1.3	1.8
Health Care Equipment & Services	131	1385.58	0.3	-1.7	0.5	1707.93	0.8	1.0
Pharmaceuticals & Biotechnology	206	497.28	0.8	-1.0	0.5	863.59	1.7	2.3
Consumer Services	424	568.15	-0.9	1.4	10.7	816.39	11.2	1.2
Food & Drug Retailers	69	304.20	0.2	-1.6	-3.2	489.92	-2.1	2.5
General Retailers	139	986.29	-1.4	2.5	10.7	1355.02	11.2	1.0
Media	75	327.77	-0.9	-0.4	13.1	474.22	13.8	1.3
Travel & Leisure	141	510.54	-0.3	1.5	15.3	749.89	15.9	1.1
Telecommunication	83	130.59	-0.1	-5.2	1.5	314.17	3.3	4.3
Fixed Line Telecommuniations	29	102.93	-0.2	-7.5	2.3	285.30	4.2	5.1
Mobile Telecommunications	54	153.55	0.0	-3.9	1.0	317.75	2.8	3.9
Utilities	201	316.83	0.2	-3.1	-1.6	754.01	-0.2	3.4
Electricity	145	355.09	0.2	-3.0	-2.8	830.63	-1.5	3.3
Gas Water & Multiutilities	56	320.20	0.2	-3.5	1.4	792.35	3.2	3.9
Financials	853	258.64	0.0	-2.2	-0.3	505.99	1.2	3.4
Banks	271	193.27	0.0	-3.1	-2.5	424.10	-0.4	4.5
Nonlife Insurance	72	376.96	0.6	0.0	3.0	642.48	5.0	2.9
Life Insurance	51	218.80	-0.1	-3.1	-3.9	428.12	-2.7	4.1
Financial Services	213	438.38	-0.1	-1.3	3.3	671.88	4.1	1.7
Technology	355	573.33	0.0	6.7	29.6	752.03	30.2	0.9
Software & Computer Services	180	872.05	-0.1	8.2	28.7	1058.76	29.1	0.6
Technology Hardware & Equipment	175	504.32	0.2	5.1	30.7	712.90	31.3	1.3
Alternative Energy	20	160.10	-0.8	-7.9	-12.5	229.82	-12.5	0.3
Real Estate Investment & Services	139	238.51	0.0	-3.2	-5.0	470.87	-3.8	3.3
Real Estate Investment Trusts	107	423.94	0.1	-3.5	-2.6	1011.02	-1.4	4.2
FTSE Global Large Cap	1936	665.43	0.1	0.6	9.4	1112.47	10.6	2.2

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FTSE 100 SUMMARY

FTSE 100	Closing Price	Day's Change	FTSE 100	Closing Price	Day's Change
3I Group PLC	1946	16.50	Jd Sports Fashion PLC	160.40	1.15
Abrdn PLC	211.70	-0.20	Johnson Matthey PLC	1904	15.50
Admiral Group PLC	2306	57.00	Kingfisher PLC	241.60	1.10
Airtel Africa PLC	116.30	0.30	Land Securities Group PLC	631.40	3.20
Anglo American PLC	2365.5	15.50	Legal & General Group PLC	236.60	1.40
Antofagasta PLC	1426.5	10.00	Lloyds Banking Group PLC	46.94	0.22
Ashtead Group PLC	4996	18.00	London Stock Exchange Group PLC	8472	36.00
Associated British Foods PLC	1899.5	4.50	M&G PLC	201.10	0.10
Astrazeneca PLC	12036	26.00	Melrose Industries PLC	480.50	-3.60
Auto Trader Group PLC	637.80	-1.20	Mondi PLC	1290	4.50
Aviva PLC	418.50	5.00	National Grid PLC	1105	2.00
B&M European Value Retail S.A.	490.00	4.30	Natwest Group PLC	271.60	3.20
Bae Systems PLC	988.00	2.40	Next PLC	6640	46.00
Barclays PLC	160.08	0.66	Ocado Group PLC	403.40	9.40
Barratt Developments PLC	501.00	1.80	Pearson PLC	827.40	-2.80
Beazley PLC	619.00	5.00	Pershing Square Holdings LTD	2738	6.00
Berkeley Group Holdings (The) PLC	4235	1.00	Persimmon PLC	1308	1.00
BP PLC	481.65	0.25	Phoenix Group Holdings PLC	582.20	6.40
British American Tobacco PLC	2678.5	12.00	Prudential PLC	1183	5.00
British Land Company PLC	356.40	0.20	Reckitt Benckiser Group PLC	6524	22.00
Bt Group PLC	147.85	2.90	Relx PLC	2495	-6.00
Bunzl PLC	3156	19.00	Rentokil Initial PLC	640.00	2.00
Burberry Group PLC	2331	41.00	Rightmove PLC	559.60	6.20
Centrica PLC	117.75	0.55	Rio Tinto PLC	4936.5	-12.00
Coca-Cola Hbc AG	2535	-3.00	Rolls-Royce Holdings PLC	157.30	1.30
Compass Group PLC	2233	-2.00	Rs Group PLC	852.80	-6.20
Convatec Group PLC	222.20	-4.00	Sage Group PLC	863.80	-1.20
Crh PLC	4018	5.00	Sainsbury (J) PLC	278.40	-2.60
Croda International PLC	6372	54.00	Schroders PLC	469.00	0.60
Dcc PLC	5022	46.00	Scottish Mortgage Investment Trust PLC	655.20	7.40
Diageo PLC	3542.5	-5.50	Segro PLC	815.00	7.00
Endeavour Mining PLC	2006	2.00	Severn Trent PLC	2812	-1.00
Entain PLC	1486.5	11.50	Shell PLC	2395	-14.00
Experian PLC	2830	17.00	Smith & Nephew PLC	1280.5	-1.50
F&C Investment Trust PLC	896.00	-7.00	Smith (Ds) PLC	317.00	-0.60
Flutter Entertainment PLC	16725	325.00	Smiths Group PLC	1685.5	-25.50
Frasers Group PLC	748.50	-17.00	Smurfit Kappa Group PLC	2994	4.00
Fresnillo PLC	659.40	-5.40	Spirax-Sarco Engineering PLC	11280	45.00
Glaxosmithkline PLC	1425.8	2.00	Sse PLC	1870.5	2.50
Glencore PLC	434.60	-0.30	St. James's Place PLC	1155	10.00
Haleon PLC	339.35	-0.70	Standard Chartered PLC	653.20	19.20
Halma PLC	2455	-43.00	Taylor Wimpey PLC	124.55	0.60
Hargreaves Lansdown PLC	816.80	5.00	Tesco PLC	267.70	1.00
Hiscox LTD	1168	1.00	Unilever PLC	4229	-42.00
HSBC Holdings PLC	617.20	6.40	Unite Group PLC	914.50	2.00
Imperial Brands PLC	1789.5	2.00	United Utilities Group PLC	1040.5	-0.50
Informa PLC	729.00	1.20	Vodafone Group PLC	81.65	-1.44
Intercontinental Hotels Group PLC	5384	22.00	Weir Group PLC	1803	-8.50
International Consolidated Airlines Group S.A.	158.70	1.45	Whitbread PLC	3318	12.00
Intertek Group PLC	4164	33.00	Wpp PLC	897.40	3.00

UK STOCK MARKET TRADING DATA

	May 22	May 19	May 18	May 17	May 16	Yr Ago
Order Book Turnover (m)	62.99	186.40	186.40	100.35	138.85	74.38
Order Book Bargains	459892.00	467183.00	467183.00	495587.00	493069.00	524133.00
Order Book Shares Traded (m)	3337.00	2231.00	2231.00	2280.00	2185.00	1876.00
Total Equity Turnover (£m)	8115.12	6450.05	6450.05	7652.08	8133.71	7722.96
Total Mkt Bargains	632892.00	652361.00	652361.00	666202.00	664915.00	703579.00
Total Shares Traded (m)	8015.00	5943.00	5943.00	6687.00	7711.00	6994.00

† Excluding intra-market and overseas turnover. *UK only total at 6pm. ‡ UK plus intra-market turnover. (u) Unavaliable. (c) Market closed.

All data provided by Morningstar unless otherwise noted. All elements listed are indicative and believed accurate at the time of publication. No offer is made by Morningstar or the FT. The FT does not warrant nor guarantee that the information is reliable or complete. The FT does not accept responsibility and will not be liable for any loss arising from the reliance on or use of the listed information.
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UK RIGHTS OFFERS

Issue price	Amount paid up	Latest renun. date	High	Low	Stock	closing Price p	+or-

There are currently no rights offers by any companies listed on the LSE.

UK COMPANY RESULTS

Company		Turnover		Pre-tax		EPS(p)		Div(p)		Pay day	Total	
Coro Energy	Pre	**0.051**	0.000	**8.187L**	6.475L	**0.000**	0.000	**0.00000**	0.00000	-	**0.000**	0.000
Ediston Property Investment Company	Int			**25.183L**	18.771	**11.920L**	8.900	**0.41670**	0.41670	Apr 28	**0.833**	0.833
Kainos Group	Pre	**374.807**	302.632	**54.338**	45.993	**33.600**	29.100	**0.00000**	15.10000	-	**7.800**	22.200
Nationwide Building Society	Pre	**4669.000**	3860.000	**2229.000**	1597.000			**0.00000**	0.00000	-	**0.000**	0.000
Nuformix	Pre	**0.000**	0.050	**0.761L**	1.270L	**0.110L**	0.190L	**0.00000**	0.00000	-	**0.000**	0.000
Wincanton	Pre	**1462.000**	1421.400	**38.200**	54.800	**26.900**	38.600	**0.00000**	8.00000	-	**4.400**	12.000

Figures in £m. Earnings shown basic. Figures in light text are for corresponding period year earlier.
For more information on dividend payments visit www.ft.com/marketsdata

UK RECENT EQUITY ISSUES

Issue date	Issue price(p)	Sector	Stock code	Stock	Close price(p)	+/-	High	Low	Mkt Cap (£m)
05/17	10.00		ADMR	Admiral Acquisition UK Ltd	9.95	-0.05	10.10	9.99	536.8
05/10	8.50	AIM	GMET	Golden Metal Resources PLC	7.63	-0.45	8.80	7.30	642.0
05/03	100.00		AWEM	Ashoka WhiteOak Emerging Markets Trust plc	110.50	3.01	110.50	98.50	0.0
04/11	2.50		SCSP	Seed Capital Solutions PLC	0.88	0.00	0.78	0.76	162.2

§Placing price. *Intoduction. ‡When issued. Annual report/prospectus available at www.ft.com/ir
For a full explanation of all the other symbols please refer to London Share Service notes.

MARKET DATA

FT500: THE WORLD'S LARGEST COMPANIES

Stock	Price	Day Chg	52 Week High	52 Week Low	Yld	P/E	MCap m
Australia (A$)							
ANZ Bank	23.79	-0.18	26.08	20.78	6.36	9.93	47467.88
BHP Group	44.20	0.04	50.09	35.83	9.33	10.34	148754.17
CmwBkAu	98.90	-0.90	111.38	86.98	3.55	18.53	110803.64
CSL	307.24	2.79	314.21	254.30	0.99	43.82	98458.8
NatAusBk	26.57	-0.23	32.83	25.43	3.39	14.10	55403.91
Telstra	4.34	-0.03	4.40	3.62	2.31	35.16	33314.65
Wesfarmers	50.85	-0.32	52.79	40.03	3.51	26.04	38308.77
Westpac Bank	21.06	-0.17	24.50	18.80	4.23	15.26	49096.27
Woolworths	38.17	-0.08	39.88	31.67	2.84	43.36	30904.14
Belgium (€)							
AnBshInBv	54.50	-0.35	62.01	45.56	0.94	28.15	102242.11
KBC Grp	60.38	0.86	72.46	45.53	5.50	10.17	27201.31
Brazil (R$)							
Ambev	14.64	0.06	16.88	12.60	3.80	22.42	46456.64
Bradesco	13.66	-0.06	17.71	11.15	5.99	6.41	14666.39
Cielo	5.29	-0.10	6.22	3.49	2.71	18.15	2894.9
ItauHldFin	22.57	-0.16	26.04	18.86	3.38	9.06	22541.53
Petrobras	28.81	-0.48	42.08	23.61	16.42	4.16	43189.6
Vale	68.17	-1.04	94.48	61.90	18.78	3.09	62326.75
Canada (C$)							
Bausch Hlth	11.22	-0.30	13.81	5.10	-	-3.43	3005.52
BCE	63.43	0.28	69.44	55.66	5.42	21.60	42830.08
BkMontrl	117.98	-1.06	138.85	113.47	3.76	9.23	62286.4
BkNvaS	66.53	-0.49	86.22	63.19	5.48	8.47	59008.48
Brookfield	58.88	11.29	63.88	41.28	1.09	19.91	69948.82
CanadPcR	111.58	-0.05	112.27	86.42	0.67	27.18	76902.52
CanImp	56.14	-0.43	71.10	53.58	10.51	3.96	38138.51
CanNatRs	77.06	1.37	87.92	58.75	2.55	12.15	62546.21
CanNatRy	161.39	0.39	175.39	137.26	1.50	23.85	79485.04
Enbridge	50.07	0.07	59.69	48.88	6.55	17.76	75052.24
GtWesLif	39.05	0.15	39.12	27.99	4.86	11.16	26917.6
ImpOil	63.27	0.43	79.83	52.67	1.60	18.51	27359.05
Manulife	26.14	0.12	27.50	20.81	4.40	7.52	35718
Nutrien	83.73	0.80	132.75	79.15	2.73	12.23	30748.01
RylBkC	127.19	-0.71	140.18	116.75	3.44	11.49	130937.14
SHOP	81.31	-0.90	87.53	33.00	-	2.86	72062.6
Suncor En	38.83	0.36	53.62	36.39	2.66	14.27	37713.56
ThmReut	170.13	0.52	180.93	121.30	1.18	11.93	59313.48
TntoDom	82.27	0.05	97.13	76.40	3.90	10.48	112030.58
TrnCan	54.36	0.28	74.44	50.70	6.29	29.76	41425.77
China (HK$)							
AgricBkCh	3.13	-0.01	3.28	2.20	6.95	4.01	12290.92
Bk China	3.27	0.02	3.45	2.51	6.94	3.96	34932.37
BkofComm	5.24	-0.02	5.65	3.83	6.81	4.23	23436.94
BOE Tech	0.64	-0.03	0.85	0.53	-	10.08	16.27
Ch Coms Cons	4.72	-0.06	5.52	3.09	4.40	3.83	2664.25
Ch Evrbrght	2.56	0.01	2.78	2.03	9.55	3.38	4146.45
Ch Rail Cons	6.13	-0.08	7.46	3.75	4.36	3.18	1625.95
Ch Rail Gp	5.38	-	6.30	3.41	3.90	4.23	2891.7
ChConstBk	5.36	0.03	5.90	4.10	7.07	3.81	164620.95
China Vanke	10.96	0.04	19.90	9.87	13.26	4.82	3089.41
ChinaCitic	4.47	0.06	4.74	2.92	6.41	4.05	8498.31
ChinaLife	14.72	-	15.84	8.53	4.73	6.29	13992.91
ChinaMBank	38.75	0.35	53.00	25.40	3.76	6.98	22726.2
ChinaMob	67.15	0.75	70.20	46.80	4.89	10.12	175522.75
ChinaPcIns	23.75	-0.25	26.50	12.10	5.64	7.56	8420.37
ChMinsheng	3.36	0.01	3.52	2.19	7.47	4.24	3571.4
ChMrchSecs	14.24	-0.07	15.98	12.12	3.21	12.16	15033.42
Chna Utd Coms	4.98	-0.01	6.45	3.30	2.35	23.90	21934.83
ChShenEgy	27.60	-	28.70	20.50	7.58	8.18	11908.56
ChShpbldng	4.77	0.03	5.32	3.37	-	-339.32	14983.64
ChStConEng	6.16	-0.02	7.35	4.68	3.64	4.57	36205.34
ChUncHK	6.19	-	6.58	3.27	2.59	13.32	24196.08
CNNC Intl	7.01	0.08	7.44	5.78	1.86	17.53	18815.34
CSR	4.94	0.08	5.26	2.37	4.27	13.26	2758.49
Daqin	7.59	-0.05	8.21	5.95	6.61	11.00	16050.52
GuosenSec	9.36	-0.01	10.55	8.43	2.57	10.29	11752.25
HaitongSecs	5.41	0.06	6.01	3.77	5.43	5.74	2356.42
Hngzh HikVDT	35.88	0.26	48.84	26.80	2.33	18.87	46487.69
Hunng Pwr	5.03	0.38	5.16	2.62	4.01	-5.51	3020.37
IM Baotou Stl	1.86	0.02	2.71	1.75	-	30.30	8380.84
In&CmBkCh	4.45	0.03	4.73	3.37	6.97	3.98	49340.68
IndstrlBk	17.08	0.04	21.00	14.91	4.75	4.48	50470.66
Kweichow	1746	46.50	2077	1333	1.16	37.63	311981.25
Midea	0.40	-0.01	0.49	0.32	-	-4.19	15.19
New Ch Life Ins	22.25	-0.25	25.00	12.04	7.03	4.12	2939.37
PetroChina	5.42	0.02	5.62	2.95	4.50	10.68	14608.88
PingAnIns	54.95	0.20	63.10	31.30	4.66	8.53	52280.58
PngAnBnk	12.38	0.04	15.27	10.22	1.47	7.07	34172.2
Pwr Cons Corp	6.91	0.01	8.45	6.76	1.34	13.74	10803.34
SaicMtr	13.74	0.06	19.29	13.65	4.52	6.58	22834.16
ShenwanHong	0.12	0.00	0.18	0.07	-	3.55	138.39
ShgPdgBk	7.54	-	8.22	6.63	6.38	4.62	31480.21
Sinopec Corp	5.15	-0.02	5.47	3.06	2.76	6.06	16303.63
Sinopec Oil	2.11	-	2.39	1.81	-	671.28	4072.58
Denmark (kr)							
DanskeBk	142.50	1.65	165.35	86.90	1.36	10.09	17815.67
MollerMrsk	11770	-90.00	22650	11100	2.79	1.98	14289.94
NovoB	1179.8	29.80	1185.6	730.60	0.77	58.84	298115.2

Stock	Price	Day Chg	52 Week High	52 Week Low	Yld	P/E	MCap m
Finland (€)							
Nokia	3.81	-0.01	5.20	3.66	-	13.60	23155.45
SampoA	43.09	0.16	49.97	39.86	3.83	9.49	23777.31
France (€)							
Airbus Grpe	128.20	-1.04	131.22	86.52	-	24.33	109425.08
AirLiquide	162.46	-0.46	164.52	114.48	1.63	31.04	91869.54
AXA	27.75	-0.02	30.34	20.34	4.98	9.67	68708.65
BNP Parib	57.31	-2.54	67.02	40.67	4.51	8.55	76391.77
ChristianDior	834.50	1.50	872.00	521.50	0.81	31.54	162669.43
Cred Agr	11.92	0.05	11.97	8.09	6.48	6.74	38963.79
Danone	58.40	-0.35	61.88	46.76	3.21	20.57	42722.35
EDF	12.00	-	12.05	7.27	3.92	9.56	51847.38
Engie SA	14.43	-0.06	15.56	10.07	3.55	10.53	37954.26
EssilorLuxottica	180.22	-3.20	188.40	132.70	0.58	56.90	87129.05
Hermes Intl	2022.5	20.00	2036	957.60	0.22	89.90	230574.33
LOreal	418.75	-2.85	442.60	300.45	0.92	52.82	242367.3
LVMH	878.20	3.90	904.60	535.00	0.77	38.07	476127.59
Orange	11.50	0.18	11.94	9.08	5.04	3952.39	33034.9
PernodRic	213.40	1.40	218.00	166.60	1.41	33.36	59444.25
Renault	33.65	0.08	43.96	22.33	-	-26.01	10744.57
Safran	143.36	0.22	145.52	87.85	0.29	1484.70	66146.23
Sanofi	100.30	-1.32	105.18	76.45	3.08	21.00	136707.73
Sant Gbn	55.31	-0.09	58.53	35.18	2.37	13.70	30807.88
Schneider	165.44	0.84	165.44	110.02	1.52	30.22	102030.88
SocGen	23.36	0.17	28.39	18.97	2.29	4.09	20383.93
Total	55.92	-0.20	60.93	45.81	4.66	11.12	150382.24
UnibailR	49.68	0.06	73.09	39.68	-	-7.44	7615.7
Vinci	110.30	-0.60	112.40	80.84	2.35	25.33	70338.84
Vivendi	9.44	-0.05	11.45	7.59	6.14	-17.46	11243
Germany (€)							
Allianz	211.60	-0.65	228.40	156.22	4.38	13.84	92160.17
BASF	47.29	-0.32	53.77	37.90	6.74	8.11	45643.06
Bayer	53.92	-0.67	67.49	46.70	3.58	54.75	57204.89
BMW	104.04	0.66	109.84	68.44	1.76	5.74	67635.97
Continental	67.34	-1.08	79.24	44.31	-	10.75	14544.56
Deut Bank	9.87	0.09	12.09	7.25	-	10.05	21735.18
Deut Tlkm	21.73	-0.13	23.13	17.35	2.67	25.87	117013.58
DeutsPost	42.44	0.21	44.64	29.68	3.14	11.12	56787.38
E.ON	11.37	0.11	12.29	7.28	3.99	6.54	32417.14
Fresenius Med	42.77	-0.46	57.22	25.95	3.03	13.38	13533.11
Fresenius SE	27.40	-0.09	32.86	19.69	3.17	8.97	16525.69
HenkelKgaA	68.98	-0.64	70.10	56.55	2.56	19.00	19352.62
Linde	340.90	-1.75	345.00	261.20	1.06	54.85	180512.03
Mercedes-Benz	71.40	0.22	75.92	50.19	1.83	7.39	82489.82
MuenchRkv	333.70	-5.80	342.90	212.70	2.84	16.51	49178.11
SAP	123.70	-0.78	125.10	79.58	1.44	28.72	164108.35
Siemens	157.92	-1.86	161.02	93.67	2.14	24.59	136430.5
Volkswgn	151.65	2.55	217.00	143.45	3.06	5.31	48326.01
Hong Kong (HK$)							
AIA	79.95	1.05	93.65	57.25	1.53	19.93	118679.1
BOC Hold	24.25	-0.05	31.85	23.55	4.72	12.12	32753.52
Ch OSLnd&Inv	17.88	-0.06	25.60	14.40	6.18	4.33	24999.76
ChngKng	45.05	-0.15	57.00	42.90	3.62	10.04	20676.14
Citic Ltd	10.28	0.14	10.86	7.01	4.82	4.63	38203.08
Citic Secs	16.26	0.04	18.52	11.60	2.71	8.16	5442.42
CK Hutchison	51.00	-0.10	56.85	38.55	4.11	6.30	24953.51
CNOOC	12.90	0.12	13.36	9.22	3.23	10.97	73460.72
HangSeng	112.40	0.40	141.40	108.30	5.00	17.62	27452.13
HK Exc&Clr	307.60	3.60	404.20	208.20	2.74	33.78	49820.4
MTR	38.80	0.25	43.65	33.15	2.92	27.37	30741.51
SandsCh	26.50	-	30.20	12.50	-	-28.51	27398.76
SHK Props	104.20	0.70	114.80	83.10	4.37	11.60	38573.65
Tencent	340.20	7.00	397.60	188.69	0.43	13.04	416694.06
India (Rs)							
Bhartiartl	801.85	-3.90	860.55	628.75	-	167.78	57777.21
HDFC Bk	1641.05	-5.85	1734.45	1271.6	-	27.27	110714.38
Hind Unilevr	2638.1	-3.35	2741.6	2100	1.24	69.26	74835.73
HsngDevFin	2704.75	-6.20	2867	2026	0.87	22.56	60188.1
ICICI Bk	950.35	-3.95	958.20	669.95	0.21	29.55	80190.42
Infosys	1292.8	23.90	1672.6	1185.3	2.40	25.03	64764.67
ITC	424.75	4.90	433.45	258.55	2.59	34.59	63732.49
L&T	2216.6	26.55	2416.35	1456.35	0.83	36.03	37610.36
OilNatGas	165.60	0.70	169.00	119.85	5.61	4.59	25152.26
RelianceIn	2455	13.05	2817.35	2180	0.29	27.53	200546.86
SBI NewA	577.15	2.00	629.55	430.70	0.71	15.77	62187.59
SunPhrmInds	937.45	11.60	1070.95	789.90	0.82	34.24	27155.93
Tata Cons	3298.7	75.85	3575	2926.1	1.13	30.88	145725.89
Israel (ILS)							
TevaPha	31.21	1.59	38.39	23.83	-	24.61	9597.7
Italy (€)							
Enel	6.04	0.03	6.26	3.96	5.86	29.09	66302.31
ENI	13.27	-0.18	14.98	10.45	4.91	5.79	51669.26
Generali	18.05	-0.96	19.23	13.67	7.87	10.50	30385.45
IntSPaolo	2.34	-0.08	2.60	1.58	1.51	75.14	46219.83
Unicred	19.10	0.09	20.05	8.24	0.61	29.37	40034.93
Japan (¥)							
AstellasPh	2309	41.00	2309	1823.5	2.20	32.27	30151.25
Bridgestne	5730	75.00	5735	4548	3.20	12.10	29508.9
Canon	3441	25.00	3516	2754.5	3.13	15.45	33116.72
CntJpRwy	17330	295.00	17920	14730	0.83	-30.16	25760.22

Stock	Price	Day Chg	52 Week High	52 Week Low	Yld	P/E	MCap m
Denso	8656	119.00	8690	6389	1.78	22.02	49214.93
EastJpRwy	8170	106.00	8325	6525	1.35	-7.61	22280.24
Fanuc	4776	95.00	24930	4409	10.45	5.27	34791.61
FastRetail	34070	-20.00	34290	19563.33	1.70	14.85	78232.05
Fuji Hvy Ind	2346	32.00	2684	1938.5	2.63	25.02	13020.79
Hitachi	8258	-43.00	8332	5983	1.54	11.24	55898.48
HondaMtr	3962	56.00	3969	2990.5	3.59	7.78	51786.84
JapanTob	3103	57.00	3109	2273	4.86	14.66	44781.18
KDDI	4489	19.00	4636	3825	2.95	13.96	74588.7
Keyence	69870	610.00	69870	44880	0.32	54.20	122617.32
MitsbCp	5627	92.00	5637	3740	2.71	11.65	59211.8
MitsubEst	1032.94	4.71	1033.43	876.51	-	-	-
MitsubishiEle	1807.5	52.50	1809	1273	2.44	15.00	28004.96
MitsuiFud	936.52	3.53	1007.12	684.38	-	-	-
MitUFJFin	923.50	-3.40	999.50	632.60	3.11	8.69	84548.11
Mizuho Fin	2061.5	-15.50	2238	1486.5	4.18	9.15	37772.23
Murata Mfg	8132	54.00	8811	6438	1.63	15.15	39654.59
Nippon TT	4204	80.00	4334	3674	2.76	12.28	109874.37
Nissan Mt	522.30	10.70	577.60	408.10	-	15.39	15907.07
Nomura	501.80	6.90	573.90	464.30	5.06	-31.32	11708.34
Nppn Stl	2865	21.50	3294	1838	3.08	4.10	19646.21
Panasonic	1474.5	10.50	1508	1006.5	1.87	13.53	26110.38
Seven & I	6450	65.00	6619	5041	1.76	22.28	41256.63
ShnEtsuCh	4268	-5.00	21055	3797	7.50	3.71	62336.87
Softbank	5218	39.00	7180	4708	0.93	4.07	55348.23
Sony	13610	20.00	13840	9213	0.49	15.77	123846.91
SumitomoF	5650	10.00	6261	3885	3.91	9.98	56045.06
Takeda Ph	4553	83.00	4629	3497	4.36	14.83	51984.32
TokioMarine	3024	163.50	3025	2333.67	8.03	4.46	43695.63
Toyota	1950	-9.50	2267	1764	2.89	7.98	229564.76
Mexico (Mex$)							
AmerMvl	19.34	0.07	21.27	15.67	1.62	16.30	45636.8
FEMSA UBD	177.20	-1.02	180.55	120.63	1.10	150.97	21414.79
WalMrtMex	70.90	-1.27	79.15	64.81	0.68	36.82	69228.52
Netherlands (€)							
ASML Hld	643.20	-0.20	657.10	375.75	0.51	51.42	280016.96
Heineken	101.90	0.70	106.30	78.28	0.93	18.29	63384.49
ING	12.05	0.03	13.55	8.43	4.81	10.15	47100.06
Unilever	48.64	-0.59	50.93	40.78	2.95	24.97	152375.12
Norway (Kr)							
DNB	187.35	0.20	209.50	168.20	10.52	10.57	26811.09
Equinor	299.85	-1.95	410.95	278.70	1.86	11.41	87383.41
Telenor	118.00	-0.40	135.80	87.60	8.64	17.59	15155.09
Qatar (QR)							
QatarNtBk	16.98	0.03	23.00	14.31	3.06	13.32	43086.46
Saudi Arabia (SR)							
AlRajhiBnk	74.70	-0.20	7317	0.00	2.95	13.80	79672.56
Natnlcombnk	37.85	-0.15	1552.5	0.00	3.51	13.85	60554.34
SaudiBasic	91.00	-0.20	2115	0.00	3.28	12.90	72793.2
SaudiTelec	44.25	-	8480	0.00	8.29	8.52	58994.5
Singapore (S$)							
DBS	30.91	0.08	36.40	29.45	3.64	13.06	59181.82
JardnMt US$	50.80	0.86	59.48	42.60	3.10	9.22	14800.49
OCBC	12.30	0.05	13.23	11.20	3.12	12.64	41042.05
SingTel	2.55	-0.01	2.82	2.31	2.69	44.37	31253.26
UOB	27.80	-0.09	31.40	25.91	3.26	12.75	34578.77
South Africa (R)							
Firstrand	61.95	0.69	72.95	56.80	4.70	9.99	18044.04
MTN Grp	113.43	0.19	170.56	107.35	-	13.78	11098.05
Naspers N	3347.38	2.99	3510	1454.08	0.20	16.04	75696.56
South Korea (KRW)							
HyundMobis	229000	2500	239500	189500	1.78	8.78	16379.37
KoreaElePwr	18470	100.00	24000	16500	6.75	-10.61	8994.9
SK Hynix	98200	900.00	113500	60600	1.59	6.91	54232.91
SmsungEl	68500	100.00	79000	51800	2.14	11.66	310218.56
Spain (€)							
BBVA	6.50	0.01	7.56	3.97	5.51	9.17	42353.61
BcoSantdr	3.23	0.03	3.87	2.32	2.29	6.70	57383.97
CaixaBnk	3.48	0.07	4.14	2.64	0.75	23.68	28169.15
Iberdrola	11.62	-0.01	11.96	9.09	3.51	20.64	80891.94
Inditex	31.65	0.26	32.10	20.06	0.67	34.57	106523.74
Repsol	13.37	-	16.23	11.19	4.33	8.44	19165.33
Telefonica	3.95	0.03	5.06	3.22	8.46	2.99	24529.21
Sweden (SKr)							
AtlasCpcoB	135.00	-2.30	138.25	22.17	5.79	8.49	19936.91
Ericsson	55.88	0.29	82.25	53.36	4.31	7.76	16243.88
H & M	145.08	0.94	157.30	98.27	4.64	18.84	20050.07
Investor	218.90	-0.30	221.95	158.20	1.71	8.87	37734.17
Nordea Bk	109.78	0.34	134.94	88.32	14.25	12.07	37442.16
SEB	115.75	0.65	133.50	99.42	9.33	9.12	23595.94
SvnskaHn	87.98	0.72	112.90	80.88	6.08	8.13	16188.62
Swedbank	169.25	1.05	219.90	124.50	9.20	8.52	18127.31
Telia Co	26.40	-0.04	41.03	25.54	8.11	8.78	9821.66
Volvo	209.10	0.80	219.75	154.28	3.33	12.83	31425.88
Switzerland (SFr)							
ABB	33.69	-0.20	34.11	23.84	2.24	16.98	73624.68
CredSuisse	0.80	0.01	6.76	0.66	11.33	-1.32	3555.88
Nestle	112.96	-0.86	118.70	103.42	2.20	20.60	335468.79
Novartis	91.24	0.73	93.95	73.33	2.99	10.41	231129.6

Stock	Price	Day Chg	52 Week High	52 Week Low	Yld	P/E	MCap m
Richemont	153.85	0.90	161.10	90.28	1.15	38.53	89327.29
Roche	286.40	-1.85	335.85	256.05	2.78	20.16	223807.31
Swiss Re	91.16	-0.56	99.68	68.16	5.87	23.13	32192.93
Swisscom	583.00	-1.60	619.40	443.40	3.41	18.22	33591.61
UBS	18.08	0.09	20.85	13.87	1.93	8.79	62594.55
Zurich Fin	428.60	0.50	458.30	384.70	4.23	15.00	71728.19
Taiwan (NT$)							
Chunghwa Telecom	125.50	-2.00	130.50	105.50	3.46	26.90	31736.34
Formosa PetChem	88.60	-1.20	97.90	75.20	0.68	16.80	27512.88
HonHaiPrc	103.00	-	116.00	98.00	3.95	10.22	46546.66
MediaTek	705.00	7.00	935.00	533.00	5.34	9.88	36762.66
TaiwanSem	531.00	-1.00	560.00	370.00	2.04	20.81	448875.59
Thailand (THB)							
PTT Explor	31.25	-	38.50	29.50	6.11	8.72	25908.07
United Arab Emirates (Dhs)							
Emirtestele	24.30	0.70	38.98	11.60	2.75	27.17	57535.64
United Kingdom (p)							
Anglo American	2365.5	15.50	4036	2299.5	7.54	4.68	39295.58
AscBrFd	1899.5	4.50	2076	1223	0.33	31.40	18336.35
AstraZen	12036	26.00	12828.45	9399	1.72	2037.93	231671.56
Aviva	418.50	5.00	473.70	341.92	5.10	55.07	14298.33
Barclays	160.08	0.66	198.86	128.12	1.87	3.88	30914.33
BP	481.65	0.25	570.57	359.20	3.27	17.48	105150.9
BrAmTob	2678.5	12.00	3645	2643	8.05	9.06	74379.1
BT	147.85	2.90	196.60	22.98	-	14.35	18237.56
Compass	2233	-2.00	2250	1630.5	0.63	54.33	48323.03
Diageo	3542.5	-5.50	3960	3413.5	2.05	27.25	98998.3
GlaxoSmh	1425.8	2.00	2753.96	16.64	5.61	16.46	72511.77
Glencore	434.60	-0.30	584.50	395.40	2.04	15.91	67472.07
HSBC	617.20	6.40	653.80	434.70	2.62	13.48	153014.54
Imperial Brands	1789.5	2.00	2185	1736.5	7.72	5.98	20419.41
Jardine Mathes.	62.50	-	55.30	46.89	2.52	11.34	18209.27
LlydsBkg	46.94	0.22	54.33	38.51	5.48	6.52	38187.03
LSE Group	8472	36.00	8893.86	6710	0.91	86.63	53259.47
Natl Grid	1105	2.00	1246.5	844.29	4.45	25.76	50466.41
Natwest Group	271.60	3.20	308.65	210.90	3.87	10.69	31968.34
Prudential	1183	5.00	1336	782.40	1.00	19.21	40450.62
ReckittB	6524	22.00	6824	5502	2.68	-28.23	58038.55
RELX	2495	-6.00	2735	2064	1.91	32.92	58882.22
RioTinto	4936.5	-12.00	6329	4424.5	10.18	5.16	76693.73
RollsRoyce	157.30	1.30	160.00	64.44	-	107.01	16346.77
Shell PLC	2395	-14.00	2613.5	1908.6	2.53	12.62	203478.62
StandCh	653.20	19.20	797.40	515.60	1.36	14.65	22880.5
Tesco	267.70	1.00	307.23	194.35	3.42	13.63	24218.73
Unilever	4229	-42.00	4868.64	3455.5	3.42	21.71	132496.03
Vodafone	81.65	-1.44	132.10	81.02	9.47	-182.66	27373.5
WPP	897.40	3.00	1082	713.00	2.95	17.09	11976.89
United States of America ($)							
21stC Fox A	31.63	0.29	37.26	28.02	1.36	13.97	8510.26
3M	100.73	1.70	152.30	98.00	5.39	10.85	55567.18
AbbottLb	108.72	-0.21	118.23	93.25	1.52	30.09	189058.3
Abbvie	145.25	0.14	168.11	134.09	3.28	24.56	256254.25
Accenture	290.16	0.25	322.88	242.80	1.17	32.13	192255.45
Activision Bli.	78.77	0.18	87.01	70.94	0.55	24.97	61775.39
Adobe	371.19	-0.06	451.15	274.73	-	39.82	170264.85
Advanced Micro	107.56	1.74	109.57	54.57	-	45.64	173210.52
AEP	86.51	-0.05	105.60	80.30	3.18	19.02	44454.55
Aflac	66.73	-0.15	74.02	52.07	1.81	11.39	40320.07
AirProd	278.33	-0.58	328.56	218.88	1.98	31.88	61823.26
Allstate	118.41	0.63	142.15	103.20	2.51	7.60	31122.98
Alphabet	124.94	2.18	126.43	83.34	-	1.21	742268.54
Altria	45.20	-0.11	54.89	40.35	7.14	36.78	80674.86
Amazon	114.50	-1.75	146.57	81.43	-	1.93	1174809.51
AmerAir	14.44	-0.38	18.22	11.65	-	-4.21	9427.55
AmerExpr	154.80	1.85	182.15	130.65	1.10	16.39	115053.66
AmerIntGrp	53.70	-0.15	64.88	45.66	2.19	5.41	38865.51
AmerTower	192.88	2.15	282.47	178.17	2.48	37.16	89890.42
Amgen	224.05	0.63	296.67	220.44	2.88	23.77	119715.87
Amphenol Corp	76.06	0.26	82.86	61.67	0.94	33.05	45279.97
Analog Devices	191.56	1.03	198.25	133.48	1.33	70.15	96901.01
Anthem	482.58	12.71	-	-	-	-	-
Aon Cp	326.41	-0.71	338.27	246.21	0.56	64.14	66667.78
Apple	174.34	-0.82	176.39	124.17	0.45	31.53	2742127.75
Applied Materi.	126.54	-0.41	132.06	71.12	0.69	19.04	106941.29
Aptiv	94.67	0.30	124.88	77.96	-	53.22	25608.84
ArcherDan	73.44	0.21	98.28	70.02	1.85	16.72	39997.98
AT&T	16.38	0.07	21.53	14.46	11.64	6.47	117091.33
Autodesk	202.55	1.66	235.01	163.20	-	97.68	43504.3
AutomData	215.82	-0.36	274.92	196.61	1.63	36.44	89160.15
AutoZone	2631.56	-21.62	2750	1703.32	-	25.93	48414.66
Avago Tech	677.75	-4.51	684.95	415.07	2.04	41.74	282567.93
BakerHu	28.32	0.15	38.66	20.42	2.40	71.48	28670.1
Bank of NY	41.14	0.25	52.26	36.22	2.90	10.84	32464.97
BankAm	28.28	0.17	38.60	26.32	2.53	8.64	225327.8
Baxter	42.95	-0.04	77.08	37.35	2.32	18.51	21726.26
BectonDick	253.48	1.60	269.06	215.90	1.22	47.83	71992.1
BerkshHat	504287	-2874.02	511334.53	393012.25	-	9.25	295435.53
Biogen	308.39	-0.09	319.74	188.54	-	32.34	44637.37
BlackRock	673.85	7.15	785.65	503.12	2.25	19.23	100917.57
Boeing	206.37	0.88	221.33	113.02	-	-31.48	124150.85

Stock	Price	Day Chg	52 Week High	52 Week Low	Yld	P/E	MCap m
Booking Holdings	2735.08	-30.18	2786.85	1616.85	-	105.89	101016.49
Bristol-Myers	65.71	-0.14	81.44	65.14	2.81	22.97	138036.16
Broadcom	677.75	-4.51	684.95	415.07	2.04	41.74	282567.93
Cadence Design	212.95	-3.76	219.09	138.76	-	92.90	58068.06
CapOne	99.43	1.50	128.95	83.93	1.84	4.02	37962.99
CardinalHlth	86.10	0.17	87.03	49.70	2.09	48.65	21921.08
Carnival	11.25	0.31	14.20	6.11	-	-1.46	12549.58
Caterpillar	213.29	-1.49	260.50	160.60	1.84	19.66	109920.21
Centene Corp	65.68	0.28	98.53	61.71	-	31.42	36043.16
CharlesSch	51.71	0.04	86.63	45.00	1.28	19.93	91489.95
Charter Comms	343.31	2.91	515.66	297.66	-	15.30	51693.23
Chevron Corp	154.48	-0.76	189.68	132.54	3.15	20.70	292675.05
Chipotle Mexic.	2115.49	9.27	2139.88	1196.28	-	100.75	58366.03
Chubb	198.74	-2.44	230.27	173.78	1.47	11.25	82313.04
Cigna	254.33	-0.81	340.11	240.11	1.44	17.63	75247.71
Cintas Corp	471.12	0.64	478.39	343.86	0.71	45.04	47913.75
Cisco	49.12	-0.02	52.56	38.61	2.79	19.02	201166.36
Citigroup	45.88	0.17	66.00	40.01	4.08	4.93	89307.24
CME Grp	181.21	-0.61	212.09	166.55	1.82	27.11	65183.87
Coca-Cola	61.76	-1.07	65.47	54.02	2.49	29.94	267085.95
Cognizant	63.89	0.88	75.40	51.33	1.38	17.20	32424.18
ColgtPlm	78.70	-1.23	83.81	67.84	2.09	33.66	65287.02
Comcast	41.54	0.36	44.66	28.39	2.21	14.90	172759.97
ConocPhil	103.94	1.34	138.49	78.30	1.72	18.67	125773.5
Constellation	235.39	0.10	261.32	208.12	1.20	-1155.90	43130.97
Corning	31.65	0.33	37.73	28.98	2.78	26.96	26902.38
Corteva	57.05	0.08	68.43	50.03	0.86	26.24	40555.3
Corteva	57.05	0.08	68.43	50.03	0.86	26.24	40555.3
Costco	490.15	-6.37	564.75	406.51	0.60	42.67	217373.29
CrownCstl	115.35	2.27	193.95	111.35	4.34	47.12	50023.98
CSX	32.03	-0.28	34.71	25.80	1.12	19.30	65123.83
CVS	69.18	-0.20	107.26	67.05	2.65	12.68	88692.3
Danaher	230.85	2.52	303.82	221.22	0.36	28.72	170340.25
Deere	357.31	-6.24	448.40	283.81	1.01	21.40	105878.94
Delta	35.59	-0.01	42.45	27.20	-	46.58	22871.01
Devon Energy	49.69	0.49	79.40	44.03	3.64	12.93	32497.26
Digital Realty	90.24	-0.51	141.77	85.76	4.71	16.57	26824.02
DiscFinServ	101.04	0.30	118.71	87.64	1.71	6.18	25658.71
Disney	91.35	-	126.48	84.07	-	57.92	166924.31
Dollar General	211.80	-3.28	261.59	183.25	0.73	22.50	46407.18
DominRes	52.15	0.03	86.28	51.69	4.43	17.83	43590.17
DukeEner	92.20	-0.31	114.50	83.76	3.88	20.40	71054.09
DuPont	67.02	0.27	78.40	49.52	1.64	22.63	30761.01
Eaton	174.67	0.52	178.75	122.50	1.60	35.67	69623.46
eBay	43.95	0.47	50.82	35.92	1.50	126.12	23499.01
Ecolab	174.57	-0.70	179.77	131.04	1.02	48.69	49703.74
Edwards Lifesc.	89.28	1.35	107.92	67.13	-	40.91	54123.16
Eli Lilly	438.31	-4.07	454.95	283.11	0.71	78.11	416075.82
Emerson	82.11	-0.38	99.65	72.41	2.27	19.55	46925.87
EOG Res	113.78	-0.81	150.88	92.16	1.30	15.53	66545.22
Equinix	730.55	6.97	752.63	494.89	1.44	144.07	68322.95
EquityResTP	62.06	0.61	80.89	54.60	3.56	19.75	23514.82
Exelon	39.95	0.08	49.86	35.19	3.51	25.04	39728.06
ExxonMb	106.23	-0.03	119.92	80.69	3.01	21.49	429486.29
Fedex	228.67	-0.41	248.76	141.92	1.15	13.41	57476.65
Fidelity NIS	58.24	1.40	106.65	48.57	2.46	94.79	34500.54
Fiserv	119.91	0.37	122.39	87.03	-	65.71	75318.63
FordMtr	11.51	-0.15	16.68	10.61	0.80	2.82	45213.71
Franklin	24.61	0.12	32.88	20.24	4.21	7.10	12326.25
GenDyn	212.28	1.63	256.86	205.40	2.02	20.04	58235.96
GenElectric	104.53	0.27	105.94	46.77	0.28	-35.08	113828.99
GenMills	85.67	-1.96	90.89	64.94	2.20	24.68	50318.27
GenMotors	32.72	0.06	43.63	30.33	-	5.33	45477.89
GileadSci	78.73	-0.11	89.74	57.17	3.31	17.42	98204.2
GoldmSchs	325.54	-0.61	389.58	277.84	1.83	5.97	108225.18
Halliburton	30.28	0.11	43.99	23.30	0.79	18.56	27318.46
HCA Hold	279.92	-2.55	294.02	164.47	0.63	14.43	77031.13
Hew-Pack	30.61	0.07	40.79	24.08	2.51	6.02	30154.39
Hilton Worldwi.	143.50	-0.68	152.89	108.41	-	107.19	37973.91
HiltonWwde	143.50	-0.68	152.89	108.41	-	107.19	37973.91
HomeDep	289.39	-1.50	347.25	264.51	2.11	20.13	293051.22
Honywell	197.70	0.35	220.96	166.63	1.75	27.26	131604.29
HumanaInc	516.02	2.50	571.30	418.70	0.50	24.82	64474.12
IBM	127.70	0.44	153.21	115.55	4.70	26.73	115957.4
IDEXX Laborato.	491.10	3.00	515.79	317.06	-	62.28	40712.19
IllinoisTool	227.19	-0.85	247.09	173.52	1.90	29.12	69043.67
Illumina	208.09	3.23	258.07	173.45	-	45.03	32898.24
Intcntl Exch	108.92	0.89	113.07	88.60	1.11	16.54	60980.71
Intel	30.14	0.21	44.93	24.59	4.23	6.76	125697.26
Intuit	453.15	7.12	490.83	352.63	0.52	61.89	127128.2
John&John	157.95	0.23	183.35	150.11	2.43	22.06	410470.05
JohnsonCn	63.25	0.03	69.15	45.52	1.67	31.50	43395.75
JPMrgnCh	139.06	-0.12	144.34	101.28	2.51	9.87	406373.44
Kimb-Clark	142.30	-2.73	147.87	108.74	3.04	29.12	48009.17
KinderM	16.55	0.03	20.20	15.78	6.16	38.98	37080.88
KLA Corp	421.66	-1.98	429.45	250.20	0.85	23.67	57851.29
Kraft Heinz	38.73	-0.34	42.80	32.73	3.79	51.51	47530.91
Kroger	49.62	-0.03	53.47	41.82	1.46	24.70	35606.12
LasVegasSd	60.00	-0.49	65.58	30.14	-	-43.33	45856.28
LibertyGbl	17.12	0.12	25.13	15.22	-	0.80	2929.94
Lilly (E)	438.31	-4.07	454.95	283.11	0.71	78.11	416075.82

Stock	Price	Day Chg	52 Week High	52 Week Low	Yld	P/E	MCap m
Linde	368.42	-3.07	373.58	262.47	1.06	54.89	180650.03
Lockheed	454.64	0.15	508.10	373.67	2.24	21.29	115138.74
Lowes	203.93	-2.34	221.42	170.12	1.36	18.30	121614.93
Lyondell	91.07	0.18	117.22	71.46	4.47	5.92	29622.72
Marathon Ptl	110.92	0.61	138.83	77.62	1.92	59.88	47061.45
Marsh&M	179.55	-0.99	182.43	143.33	1.37	30.12	88827.22
MasterCard	385.75	0.18	392.20	276.87	0.53	48.02	362715.76
McDonald's	292.32	-3.23	298.86	228.59	1.65	31.75	213402.88
McKesson	395.80	-1.87	401.78	298.69	0.41	48.88	53671.38
Medtronic	89.84	0.51	106.06	75.77	2.55	26.74	119525.27
Merck	115.31	-0.18	119.65	83.05	2.10	25.88	292587.93
Meta	250.16	4.52	253.57	88.09	-	19.81	553392.25
Metlife	52.18	0.60	77.36	48.95	3.34	7.78	39956.7
Microsoft	320.68	2.34	322.59	213.43	0.66	37.24	2384412.16
Mnstr Bvrg	59.49	-0.19	60.47	41.95	-	25.24	59490
MondelezInt	76.02	-1.05	78.59	54.72	1.60	27.27	103521.29
Monsanto	10.07	0.02	11.13	9.56	-	51.84	251.75
MorganStly	82.97	0.73	100.99	72.05	2.32	11.27	138569.33
Netflix	365.87	0.51	375.87	164.28	-	35.50	162642.71
NextEraE	74.95	0.47	91.35	69.64	1.99	107.38	151655.47
Nike	111.70	-3.06	129.23	82.22	0.96	31.84	137624.63
NorfolkS	220.64	2.90	264.22	196.33	1.73	19.87	50226.4
Northrop	443.29	-0.02	556.27	433.18	1.27	11.10	67317.77
NXP	176.93	1.97	198.28	132.08	1.17	28.42	45913.34
Occid Pet	59.37	0.24	77.13	54.30	0.06	31.43	52940.95
Oracle	102.01	-0.83	103.10	60.78	1.16	42.06	275406.8
Pepsico	187.70	-4.14	196.88	154.86	2.07	37.29	258593
Perrigo	33.74	0.08	43.90	30.78	2.61	-37.55	4565.89
Pfizer	38.17	1.40	54.93	36.17	3.75	10.59	215481.37
Phillips66	96.01	1.07	113.53	74.02	3.46	35.25	44055.37
PhilMorris	93.29	0.10	109.81	82.85	4.82	17.45	144804.43
PNCFin	119.45	0.97	176.47	110.31	3.68	10.26	47673.45
PPG Inds	142.54	0.14	145.51	107.06	1.53	34.11	33555.03
ProctGmbl	149.97	-3.20	158.11	122.18	2.19	27.80	353474.69
Prudntl	81.51	0.72	110.96	75.37	5.17	4.56	29751.15
PublStor	285.73	0.83	357.13	270.13	2.57	31.57	50233.9
Qualcomm	104.72	-1.14	156.66	101.93	2.36	13.08	116658.08
Raytheon	95.79	-0.34	104.91	80.27	1.92	40.49	139962.79
Regen Pharm	744.37	-14.68	837.55	538.01	-	11.28	80024.99
S&P Global	370.75	5.33	395.80	279.32	0.76	32.32	119381.5
Salesforce	211.41	1.05	213.88	126.34	-	154.31	207363.16
Schlmbrg	45.84	0.57	59.45	30.65	1.00	37.88	65107.41
Sempra Energy	146.56	0.74	176.47	136.54	2.75	39.86	46115.18
Shrwin-Will	232.77	-	278.31	195.24	0.87	36.37	60029.13
SimonProp	105.57	0.21	129.55	86.02	6.21	16.83	34520.17
SouthCpr	69.34	0.46	82.05	42.42	4.23	17.23	53606.87
Starbucks	103.74	-1.77	115.48	70.35	1.63	30.58	118927.54
StateSt	68.32	0.32	94.74	58.62	2.93	10.36	22836.56
Stryker	288.83	3.46	306.56	188.84	0.82	60.46	109417.83
Sychrony Fin	30.16	0.14	40.89	26.59	2.75	4.33	12925.69
T-MobileUS	137.92	-1.11	154.38	121.76	-	62.41	165489.17
Target	151.15	-1.13	183.89	137.16	1.94	11.58	69763.71
TE Connect	124.28	0.20	138.24	104.76	1.46	18.42	39160.63
Tesla Mtrs	185.28	5.14	314.67	101.81	-	41.24	587245.76
TexasInstr	170.13	0.02	186.30	144.46	2.27	22.46	154419.15
TheTrvelers	182.01	-1.71	194.45	149.65	1.82	12.24	42040.04
ThrmoFshr	530.71	3.33	611.06	475.77	0.18	29.74	204706.14
TJX Cos	79.44	0.09	83.13	54.55	1.21	31.78	91474.59
Truist Financial Corp	30.36	0.66	52.22	25.56	5.62	7.41	40430.37
Twitter	53.70	0.35	60.16	31.30	-	-224.30	41093.72
UnionPac	198.66	-0.31	242.36	183.69	2.14	20.02	121120.88
UPS	171.25	0.32	209.39	154.87	2.18	12.72	124114.9
USBancorp	30.74	0.63	53.37	27.27	5.25	6.57	47121.98
UtdHlthcre	480.84	2.02	558.10	449.70	1.07	29.00	447677.44
ValeroEngy	112.60	2.35	146.81	96.93	3.19	54.09	40705
Verizon	36.10	0.05	52.18	34.55	6.44	7.40	151624.17
VertexPharm	339.63	-2.07	354.46	243.17	-	41.11	87472.25
VF Cp	19.46	0.39	51.40	18.54	9.28	6.96	7563.22
Visa Inc	232.89	-0.42	235.57	174.60	0.53	42.05	376868.05
Walgreen	30.51	-0.77	44.27	30.15	5.76	4.82	26323.9
WalMartSto	148.77	-1.14	154.64	117.27	1.37	33.00	401284.29
Walt Disney	91.35	-	126.48	84.07	-	57.92	166924.31
Waste Manage.	164.21	-1.16	175.98	138.89	1.28	41.74	66801.34
WellsFargo	40.82	0.79	48.84	35.25	1.73	9.00	153147
Williams Cos	29.17	-0.08	37.97	27.80	5.16	25.65	35528.43
Workday	197.04	1.33	206.68	128.72	-	1773.82	40544.93
Yum!Brnds	136.95	-1.33	143.25	103.97	1.34	28.67	38357.91
Zoetis	180.67	1.12	187.82	124.15	0.51	46.14	83489.8
Zoom	70.47	1.10	124.05	60.45	-	16.92	17420.18
Venezuela (VEF)							
Bco de Vnzla	4.29	-	4.59	0.70	123.11	-	602.40
Bco Provncl	7.80	-	70000	6.80	-	0.00	112.62

Closing prices and highs & lows are in traded currency (with variations for that country indicated by stock), market capitalisation is in USD. Highs & lows are based on intraday trading over a rolling 52 week period.
♦ ex-dividend
■ ex-capital redistribution
price at time of suspension

FT 500: TOP 20

	Close price	Prev price	Day change	Day change %	Week change	Week change %	Month change %
Bausch Hlth	11.22	11.52	-0.30	-2.60	3.77	44.8	10.76
SK Hynix	98200.00	97300.00	900.00	0.92	10100.00	12.6	10.21
CapOne	99.43	97.93	1.50	1.53	8.81	11.6	2.94
Tesla Mtrs	185.28	180.14	5.14	2.85	13.79	11.4	12.26
TokioMarine	3024.00	2860.50	163.50	5.72	126.50	10.6	13.12
Advanced Micro	107.56	105.82	1.74	1.64	8.42	10.4	21.64
Carnival	11.25	10.94	0.31	2.79	0.63	9.1	19.86
Netflix	365.87	365.36	0.51	0.14	29.47	8.9	11.53
Truist Financial Corp	30.36	29.70	0.66	2.21	1.83	8.9	-3.54
AstellasPh	2309.00	2268.00	41.00	1.81	139.00	8.5	15.50
RollsRoyce	157.30	156.00	1.30	0.83	10.90	8.4	1.65
Sychrony Fin	30.16	30.02	0.14	0.47	2.05	7.8	1.48
ASML Hld	642.20	643.40	-1.20	-0.19	47.80	7.8	10.75
FastRetail	34070.00	34090.00	-20.00	-0.06	2450.00	7.7	6.38
Panasonic	1474.50	1464.00	10.50	0.72	93.00	7.5	14.27
ShnEtsuCh	4268.00	4273.00	-5.00	-0.12	303.00	7.5	4.41
Adobe	371.19	371.25	-0.06	-0.02	25.58	7.4	-1.72
Alphabet	124.94	122.76	2.18	1.78	6.25	7.2	18.56
TaiwanSem	531.00	532.00	-1.00	-0.19	36.00	7.1	3.91
SmsungEl	68500.00	68400.00	100.00	0.15	4300.00	6.9	4.11

Based on the FT Global 500 companies in local currency

FT 500: BOTTOM 20

	Close price	Prev price	Day change	Day change %	Week change	Week change %	Month change %
VF Cp	19.46	19.07	0.39	2.04	-2.59	-10.2	-14.97
Vodafone	81.65	83.09	-1.44	-1.73	-6.94	-9.3	-9.86
Ch OSLnd&Inv	17.88	17.94	-0.06	-0.33	-1.66	-8.8	-11.29
Digital Realty	90.24	90.75	-0.51	-0.56	-7.63	-8.3	-6.62
BOE Tech	0.64	0.67	-0.03	-4.48	-0.02	-7.2	-6.15
Nike	111.70	114.76	-3.06	-2.67	-5.07	-6.8	-11.01
SampoA	43.09	42.93	0.16	0.37	-3.03	-6.2	-4.33
KoreaElePwr	18470.00	18370.00	100.00	0.54	-1330.00	-6.2	-3.72
China Vanke	10.96	10.92	0.04	0.37	-0.76	-6.2	-10.29
Target	151.15	152.28	-1.13	-0.74	-8.29	-5.9	-6.80
ChStConEng	6.16	6.18	-0.02	-0.32	-0.35	-5.7	-3.30
E.ON	11.39	11.26	0.14	1.20	-0.82	-5.6	-5.63
Chna Utd Coms	4.98	4.99	-0.01	-0.20	-0.27	-5.3	-9.62
GenMills	85.67	87.63	-1.96	-2.24	-2.66	-5.1	-2.01
DominRes	52.15	52.12	0.03	0.05	-2.65	-4.8	-9.65
Natl Grid	1105.00	1103.00	2.00	0.18	-57.50	-4.8	-3.80
Cielo	5.32	5.39	-0.07	-1.30	-0.19	-4.7	4.31
T-MobileUS	137.92	139.03	-1.11	-0.80	-5.59	-4.6	-5.68
Imperial Brands	1789.50	1787.50	2.00	0.11	-85.50	-4.5	-7.97
Generali	18.05	19.01	-0.96	-5.05	0.14	-4.3	-5.50

Based on the FT Global 500 companies in local currency

BONDS: HIGH YIELD & EMERGING MARKET

May 22	Red date	Coupon	Ratings S*	Ratings M*	Ratings F*	Bid price	Bid yield	Day's chge yield	Mth's chge yield	Spread vs US
High Yield US$										
HCA Inc.	04/24	8.36	BB-	Ba2	BB	113.75	4.24	0.00	0.12	-
High Yield Euro										
Aldesa Financial Services S.A.	04/21	7.25	-	-	B	71.10	28.23	0.00	0.64	25.98
Emerging US$										
Peru	03/19	7.13	BBB+	A3	BBB+	104.40	2.60	-	-	0.34
Colombia	01/26	4.50	-	Baa2	BBB-	109.50	2.33	0.16	0.52	1.28
Brazil	04/26	6.00	-	Ba2	BB-	115.15	2.78	-0.01	0.65	1.73
Poland	04/26	3.25	-	A2	A-	111.22	0.98	0.03	0.16	-0.07
Mexico	05/26	11.50	-	Baa1	BBB-	149.00	1.61	0.00	-0.12	0.56
Turkey	03/27	6.00	-	Ba2	BB+	101.26	5.82	0.00	0.17	3.07
Turkey	03/27	6.00	-	B2	BB-	102.88	5.43	0.14	0.83	4.38
Peru	08/27	4.13	BBB+	A3	BBB+	103.50	3.66	0.01	-0.02	0.80
Russia	06/28	12.75	-	Baa3	BBB	168.12	2.48	0.07	0.05	-
Brazil	02/47	5.63	-	Ba2	BB-	101.48	5.52	0.08	0.80	-
Emerging Euro										
Brazil	04/21	2.88	BB-	Ba2	BB-	103.09	0.05	0.01	-0.09	-1.19
Mexico	04/23	2.75	BBB+	A3	BBB+	107.76	0.76	0.00	-0.07	-1.56
Mexico	04/23	2.75	-	Baa1	BBB-	106.48	-0.26	-	-	-0.36
Bulgaria	03/28	3.00	BBB-	Baa2	BBB	117.04	1.00	0.02	-0.15	-1.42

Interactive Data Pricing and Reference Data LLC, an ICE Data Services company. US $ denominated bonds NY close; all other London close. *S - Standard & Poor's, M - Moody's, F - Fitch.

BONDS: GLOBAL INVESTMENT GRADE

May 22	Red date	Coupon	Ratings S*	Ratings M*	Ratings F*	Bid price	Bid yield	Day's chge yield	Mth's chge yield	Spread vs US
US$										
FleetBoston Financial Corp.	01/28	6.88	BBB+	Baa1	A-	129.00	2.54	-0.01	-0.05	-
The Goldman Sachs Group, Inc.	02/28	5.00	BBB+	A3	A	117.21	2.47	0.00	0.32	-
NationsBank Corp.	03/28	6.80	BBB+	Baa1	A-	127.69	2.72	-0.01	0.06	-
GTE LLC	04/28	6.94	BBB+	Baa2	A-	128.27	2.80	0.00	-0.11	-
United Utilities PLC	08/28	6.88	BBB	Baa1	A-	130.43	2.62	-0.07	-0.22	-
Barclays Bank plc	01/29	4.50	A	A1	A+	96.46	5.02	0.00	0.02	-
Euro										
Electricite de France (EDF)	04/30	4.63	A-	A3	A-	137.45	0.82	-0.01	0.10	-
The Goldman Sachs Group, Inc.	02/31	3.00	BBB+	A3	A	124.42	0.68	0.00	-0.11	-
The Goldman Sachs Group, Inc.	02/31	3.00	BBB+	A3	A	121.70	0.93	0.00	0.02	-
Finland	04/31	0.75	AA+	Aa1	AA+	111.08	-0.27	0.00	-0.05	-0.87
Yen										
Mexico	06/26	1.09	-	Baa1	BBB-	98.73	1.34	-0.02	-0.14	0.27
£ Sterling										
innogy Fin B.V.	06/30	6.25	BBB	Baa2	A-	128.68	3.20	0.00	-0.01	0.40
innogy Fin B.V.	06/30	6.25	BBB	Baa2	A-	137.45	2.19	-0.03	0.02	-

Interactive Data Pricing and Reference Data LLC, an ICE Data Services company. US $ denominated bonds NY close; all other London close. *S - Standard & Poor's, M - Moody's, F - Fitch.

INTEREST RATES: OFFICIAL

May 22	Rate	Current	Since	Last
US	Fed Funds	4.75-5.00	22-03-2023	4.75-4.50
US	Prime	8.25	04-05-2023	8.00
US	Discount	5.00	02-05-2023	4.75
Euro	Repo	3.25	02-05-2023	2.899
UK	Repo	4.50	11-05-2023	4.25
Japan	O'night Call	0.00-0.10	01-02-2016	0.00
Switzerland	Libor Target	-1.25-0.25	15-01-2015	-0.75--0.25

INTEREST RATES: MARKET

May 22 (Libor: May 19)	Over night	Change Day	Change Week	Change Month	One month	Three month	Six month	One year
US$ Libor	5.06529	0.005	4.140	-0.009	5.13971	5.39271	5.46657	5.44457
Euro Libor	-0.64957	-0.064	-0.224	0.001	-0.61943	-0.58057	-0.55600	-0.48571
£ Libor	0.18063	-0.005	-0.043	0.001	4.20130	4.72660	4.74470	0.81363
Swiss Fr Libor				-0.002	-0.77540	-0.75300	-0.70280	-0.55320
Yen Libor				0.000	-0.06005	-0.02617	0.07165	0.04867
Euro Euribor				-0.017	3.13400	3.41500	3.70700	3.87800
Sterling CDs				0.000	0.50000	0.63000	0.78500	
US$ CDs				0.010	5.16000	5.32000	5.40000	
Euro CDs				0.020	3.16000	3.33000	3.59000	

May 22	Short term		7 Days notice		One month		Three month		Six month		One year	
Euro	2.89	3.19	2.93	3.23	3.01	3.31	3.18	3.48	3.44	3.74	3.53	3.83
Sterling					0.45	0.55	0.58	0.68	0.71	0.86	0.90	1.05
US Dollar	4.88	5.08	4.91	5.11	5.06	5.26	5.22	5.42	5.30	5.50	5.18	5.38
Japanese Yen	-0.30	-0.10	-0.30	-0.10	-0.25	0.05	-0.15	0.05	-0.05	0.15	0.00	0.20

Libor rates come from ICE (see www.theice.com) and are fixed at 11am UK time. Other data sources: US $, Euro & CDs: Tullett Prebon; SDR, US Discount: IMF; EONIA: ECB; Swiss Libor: SNB; EURONIA, RONIA & SONIA: WMBA.

BOND INDICES

	Index	Day's change	Month's change	Year change	Return 1 month	Return 1 year
Markit IBoxx						
ABF Pan-Asia unhedged	208.55	-0.25	-0.55	2.37	-0.28	3.71
Corporates(£)	327.24	-0.15	-1.32	1.27	-0.22	-8.21
Corporates(€)	211.10	0.13	-0.57	1.83	0.16	-4.20
Eurozone Sov(€)	210.69	0.20	-0.77	1.53	0.39	-8.98
Gilts(£)	263.94	-0.11	-2.53	-2.09	-1.44	-18.22
Overall(£)	275.14	-0.12	-2.16	-1.20	-1.09	-15.65
Overall(€)	207.23	0.17	-0.66	1.49	0.37	-7.82
FTSE						
Sterling Corporate (£)	-	-	-	-	-	-
Euro Corporate (€)	104.47	-0.05	-	-	0.54	-1.73
Euro Emerging Mkts (€)	645.46	11.72	-	-	-3.89	0.57
Eurozone Govt Bond	110.04	-0.19	-	-	-0.34	-0.64

CREDIT INDICES

	Index	Day's change	Week's change	Month's change	Series high	Series low
Markit iTraxx						
Crossover 5Y	430.17	-4.35	-18.88	-10.29	510.17	424.31
Europe 5Y	81.50	-1.00	-4.97	-1.71	101.15	79.69
Japan 5Y	73.63	0.18	-3.53	-9.74	99.54	73.08
Senior Financials 5Y	94.13	-1.71	-7.22	-2.26	124.01	91.28
Markit CDX						
Emerging Markets 5Y	257.40	1.56	8.99	15.91	265.81	229.64
Nth Amer High Yld 5Y	493.03	-1.19	-3.53	25.00	511.98	458.20
Nth Amer Inv Grade 5Y	79.47	-0.17	-1.37	3.44	88.71	73.57

Websites: markit.com, ftse.com. All indices shown are unhedged. Currencies are shown in brackets after the index names.

VOLATILITY INDICES

	May 22	Day Chng	Prev	52 wk high	52 wk low
VIX	16.92	0.11	16.81	35.05	15.53
VXD	15.23	0.08	15.15	37.57	10.88
VXN	19.80	0.12	19.68	41.12	5.85
VDAX	16.58	0.65	15.92	93.30	-

† CBOE. VIX: S&P 500 index Options Volatility, VXD: DJIA Index Options Volatility, VXN: NASDAQ Index Options Volatility.
‡ Deutsche Borse. VDAX: DAX Index Options Volatility.

BONDS: BENCHMARK GOVERNMENT

	Red Date	Coupon	Bid Price	Bid Yield	Day chg yield	Wk chg yield	Month chg yld	Year chg yld
Australia	-	-	-	-	-	-	-	-
	05/32	1.25	82.17	3.59	0.10	0.27	0.25	0.19
	02/50	1.00	100.48	1.60	0.08	0.06	0.12	0.25
Austria	02/29	0.50	87.44	2.90	-0.01	0.21	0.13	1.73
	02/47	1.50	70.75	3.29	-0.02	0.16	0.19	1.72
Belgium	06/27	0.80	92.47	2.78	-0.02	0.19	0.10	1.87
	06/47	1.60	69.02	3.53	-0.05	0.14	0.14	1.58
Canada	03/25	1.25	95.31	4.02	-0.08	0.26	0.32	1.30
	06/30	1.25	88.34	3.11	-0.08	0.24	0.27	0.25
	12/48	2.75	92.26	3.20	-0.01	0.19	0.20	0.31
Denmark	11/29	0.50	87.60	2.60	-0.03	0.15	0.06	1.41
	11/52	0.25	50.12	2.74	-0.01	0.14	0.17	1.36
Finland	09/24	0.00	96.11	3.06	0.10	0.22	0.19	2.57
	09/29	0.50	86.37	2.89	0.00	0.19	0.10	1.71
France	05/28	0.75	90.73	2.76	-0.02	0.18	0.10	1.74
	05/48	2.00	76.42	3.42	-0.05	0.14	0.15	1.61
Germany	08/29	0.00	86.52	2.35	-0.02	0.18	0.09	1.55
	08/50	0.00	50.84	2.52	-0.03	0.15	0.18	1.48
Greece	-	-	-	-	-	-	-	-
	01/28	3.75	101.15	3.48	0.00	0.07	-0.15	1.01
Ireland	-	-	-	-	-	-	-	-
	05/26	1.00	95.03	2.76	-0.01	0.16	0.09	2.01
	02/45	2.00	79.00	3.38	-0.04	0.13	0.15	1.58
Italy	02/25	0.35	95.00	3.41	-0.03	0.11	0.08	1.98
	05/30	0.40	90.33	1.89	-0.03	0.08	0.16	1.59
	03/48	3.45	83.11	4.60	-0.07	0.08	0.15	1.42
Japan	04/25	0.05	100.05	0.02	0.00	-0.01	-0.02	-0.03
	12/29	0.10	99.45	0.18	0.02	0.02	-0.02	0.02
	12/49	0.40	81.53	1.22	0.01	0.00	-0.05	0.25
Netherlands	07/27	0.75	92.68	2.64	-0.01	0.18	0.08	1.80
	01/47	2.75	98.10	2.86	-0.03	0.14	0.17	1.62
New Zealand	05/31	1.50	80.65	4.40	0.11	0.41	0.33	0.81
	09/40	2.50	120.48	2.55	0.12	0.23	0.31	0.47
Norway	08/30	1.38	87.44	3.36	0.11	0.15	0.20	0.58
Poland	-	-	-	-	-	-	-	-
	07/27	2.50	87.53	5.96	0.06	0.23	0.03	-0.84
	04/47	4.00	77.06	5.80	0.01	-0.03	-0.14	-0.51
Portugal	04/27	4.13	104.86	2.79	-0.03	0.14	0.08	1.52
Spain	-	-	-	-	-	-	-	-
	10/29	0.60	85.11	3.19	-0.02	0.17	0.13	1.56
	10/46	2.90	83.72	3.98	-0.05	0.13	0.18	1.53
Sweden	06/30	0.13	113.65	0.69	0.10	0.10	-0.06	1.78
	03/39	3.50	112.45	2.54	0.13	0.17	0.10	0.67
Switzerland	04/28	4.00	114.81	0.88	0.03	0.05	-0.07	0.52
	06/29	0.00	94.60	0.92	0.05	0.03	-0.07	0.48
United Kingdom	07/23	0.75	99.41	4.32	-0.10	-0.04	0.05	2.91
	07/27	1.25	89.91	3.90	0.05	0.24	0.23	2.32
	07/47	1.50	56.86	4.42	0.04	0.22	0.33	2.30
United States	-	-	-	-	-	-	-	-
	03/25	0.50	93.22	4.34	0.01	0.29	0.23	1.54
	02/30	1.50	86.88	3.72	0.05	0.28	0.23	0.88
	02/50	0.25	68.84	1.71	0.03	0.13	0.15	0.96

Interactive Data Pricing and Reference Data LLC, an ICE Data Services company.

GILTS: UK CASH MARKET

May 22	Price £	Red Yield	Change in Yield Day	Change in Yield Week	Change in Yield Month	Change in Yield Year	52 Week High	52 Week Low	Amnt £m
	-	-	-	-	-	-	-	-	-
Tr 0.75pc '23	99.42	4.26	0.47	0.24	0.95	200.00	99.42	97.34	34.36
Tr 0.125pc '24	97.15	4.36	0.69	2.11	1.63	186.84	97.80	94.34	35.55
Tr 2pc '25	95.37	4.14	1.72	5.61	6.98	168.83	101.69	93.15	39.93
Tr 0.125pc '26	90.24	3.99	1.79	6.97	7.55	160.78	95.25	86.33	35.32
Tr 1.25pc '27	89.71	3.95	1.54	7.05	7.34	150.00	98.68	85.65	40.99
Tr 0.5pc '29	82.28	4.01	1.01	6.37	6.65	134.50	95.06	78.21	28.92
Tr 1pc '32	78.23	3.99	1.01	6.12	7.26	112.23	122.11	78.23	35.96
Tr 4.25pc '36	100.58	4.19	0.72	6.08	7.16	100.48	126.08	94.91	31.68
Tr 4.5pc '42	101.36	4.40	0.69	4.76	7.32	103.70	139.05	93.79	28.35
Tr 3.75pc '52	89.00	4.42	0.45	4.49	7.80	110.48	137.12	82.51	25.11
Tr 4pc '60	93.84	4.34	0.70	4.83	8.77	118.09	153.51	87.32	25.13

Gilts benchmarks & non-rump undated stocks. Closing mid-price in pounds per £100 nominal of stock.

GILTS: UK FTSE ACTUARIES INDICES

Price Indices Fixed Coupon	May 22	Day's chg %	Total Return	Return 1 month	Return 1 year	Yield
1 Up to 5 Years	81.01	-0.13	2345.47	-0.25	-2.66	4.11
2 5 - 10 Years	145.12	-0.28	3097.14	-1.56	-10.50	3.94
3 10 - 15 Years	151.77	-0.35	3535.81	-2.62	-16.16	4.19
4 5 - 15 Years	145.55	-0.30	3199.46	-1.89	-12.15	4.04
5 Over 15 Years	199.03	-0.41	3460.97	-5.35	-30.83	4.37
7 All stocks	130.99	-0.27	2947.90	-2.44	-16.65	4.26

Index Linked	May 22	Day's chg %	Month chg %	Year's chg %	Total Return	Return 1 month	Return 1 year
1 Up to 5 Years	324.30	-0.12	-0.90	0.53	2756.34	-0.72	1.64
2 Over 5 years	505.80	-0.42	-7.38	-29.79	3866.53	-7.26	-29.40
3 5-15 years	442.97	-0.29	-3.65	-12.44	3598.26	-3.50	-11.70
4 Over 15 years	549.47	-0.51	-9.97	-38.62	4073.95	-9.88	-38.38
5 All stocks	485.20	-0.37	-6.31	-25.90	3785.27	-6.18	-25.43

Yield Indices	May 22	May 19	Yr ago		May 22	May 19	Yr ago
5 Yrs	3.91	3.85	1.64	20 Yrs	4.40	4.37	2.26
10 Yrs	4.06	4.02	1.99	45 Yrs	4.25	4.23	1.98
15 Yrs	4.29	4.26	2.21				

Real yield	inflation 0% May 22	inflation 0% Dur yrs	inflation 0% Previous	inflation 0% Yr ago	inflation 5% May 22	inflation 5% Dur yrs	inflation 5% Previous	inflation 5% Yr ago
Up to 5 yrs	0.95	2.32	0.90	-2.28	0.64	2.34	0.58	-2.86
Over 5 yrs	0.94	18.78	0.92	-1.23	0.92	18.82	0.90	-1.26
5-15 yrs	0.67	9.22	0.64	-1.70	0.61	9.23	0.57	-1.80
Over 15 yrs	1.01	25.54	0.99	-1.16	1.00	25.55	0.98	-1.18
All stocks	0.94	15.91	0.92	-1.25	0.91	15.97	0.89	-1.28

See FTSE website for more details www.ftse.com/products/indices/gilts

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COMMODITIES

www.ft.com/commodities

Energy		Price*	Change	Agricultural & Cattle Futures		Price*	Change
Crude Oil†	Jul	71.65	-0.04	Corn♦	Jul	562.50	8.00
Brent Crude Oil‡		75.92	0.34	Wheat♦	Jul	602.75	-2.25
RBOB Gasoline†	Jul	2.57	0.00	Soybeans♦	Jul	1321.00	13.75
Natural Gas†	Jun	2.51	-0.08	Soybeans Meal♦	Jul	409.80	0.70
Base Metals (♠ LME 3 Months)				Cocoa (ICE Liffe)✠	Jul	2370.00	-28.00
Aluminium		2267.00	-17.00	Cocoa (ICE US)♥	Jul	3047.00	-21.00
Aluminium Alloy		2150.00	-75.00	Coffee(Robusta)✠	Jul	2632.00	44.00
Copper		8185.00	-57.00	Coffee (Arabica)♥	Jul	191.95	-0.05
Lead		2083.00	-8.00	White Sugar✠		712.00	2.00
Nickel		21505.00	35.00	Sugar 11♥		25.87	0.09
Tin		24945.00	-460.00	Cotton♥	Jul	87.01	0.29
Zinc		2446.00	-30.50	Orange Juice♥	Jul	258.55	0.35
Precious Metals (PM London Fix)				Live Cattle♣	Jun	165.90	0.38
Gold		1961.60	1.30	Feeder Cattle♣	May	134.88	-
Silver (US cents)		2366.00	14.00	Lean Hogs♣	Jun	83.15	-2.15
Platinum		1071.00	4.00				
Palladium		1518.00	54.00		May 19	% Chg Month	% Chg Year
Bulk Commodities							
Iron Ore		107.10	-0.17	S&P GSCI Spt	543.80	-5.25	-28.99
Baltic Dry Index		1365.00	-19.00	DJ UBS Spot	100.72	-4.60	-22.85
Richards Bay ICE Futures		110.00	0.00	TR/CC CRB TR	289.74	-4.28	-13.29
				LEBA EUA Carbon	58.91	-1.98	129.94
				LEBA UK Power	1048.00	-37.43	-39.60

Sources: † NYMEX, ‡ ECX/ICE, ♦ CBOT, ✠ ICE Liffe, ♥ ICE Futures, ♣ CME, ♠ LME/London Metal Exchange.* Latest prices, $ unless otherwise stated.

BONDS: INDEX-LINKED

	Price May 19	Yield May 19	Yield Prev	Month return	Value stock	Market	No of stocks
Can 4.25%' 26	109.48	1.483	1.558	-0.71	5.25	71646.70	8
Fr 0.25%' 24	100.34	-0.034	-0.029	0.25	17.92	258486.33	17
Swe 1.00%' 25	126.53	0.962	0.872	0.37	35.93	225880.81	7
UK 2.500%' 24	374.78	1.501	1.511	0.03	6.82	519990.20	30
UK 2.50%' 24	374.78	1.501	1.511	0.03	6.82	519990.20	30
UK 2.00%' 35	238.83	0.693	0.646	-2.82	9.08	519990.20	30
US 0.625%' 26	96.63	1.934	1.883	-0.63	42.42	1642464.32	48
US 3.625%' 28	109.32	1.640	1.577	-1.23	16.78	1642464.32	48

Representative stocks from each major market Source: Merill Lynch Global Bond Indices † Local currencies. ‡ Total market value. In line with market convention, for UK Gilts inflation factor is applied to price, for other markets it is applied to par amount.

BONDS: TEN YEAR GOVT SPREADS

	Bid Yield	Spread vs Bund	Spread vs T-Bonds		Bid Yield	Spread vs Bund	Spread vs T-Bonds
Australia	3.59	1.23	-0.13	Netherlands	2.64	0.29	-1.08
Austria	2.90	0.55	-0.82	New Zealand	4.40	2.05	0.68
Canada	3.11	0.76	-0.61	Norway	3.36	1.01	-0.36
Denmark	2.60	0.25	-1.12	Portugal	2.79	0.44	-0.93
Finland	2.89	0.54	-0.83	Spain	3.19	0.84	-0.53
Germany	2.35	0.00	-1.37	Sweden	0.69	-1.67	-3.03
Italy	1.89	-0.47	-1.83	Switzerland	0.92	-1.43	-2.80
Japan	0.18	-2.17	-3.54	United States	3.72	1.37	0.00

Interactive Data Pricing and Reference Data LLC, an ICE Data Services company.

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ARTS

'We need to be financially prudent but artistically brave'

Gilane Tawadros, the new head of London's Whitechapel Gallery, stirred up anger with early changes – but now has cause for optimism. She talks to Melanie Gerlis

It has been a tumultuous start for Gilane Tawadros at the helm of London's esteemed Whitechapel Gallery. Seven months ago she came into a non-profit organisation that, like many, had suffered from years of stagnant state backing in a challenging fundraising environment. She then faced an Arts Council England grant cut (down 6.5 per cent to £1.4mn annually until 2026) just as runaway energy prices upped the cost of keeping the museum open.

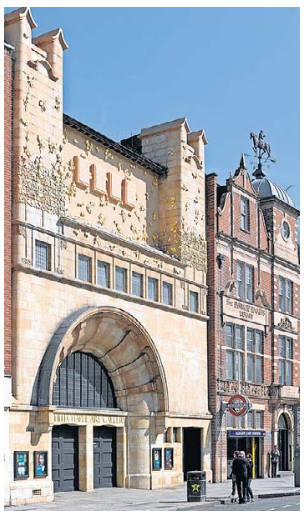
Her first visible act as director was a cost-cutting package which meant six staff, including three respected curators (out of seven total), losing their jobs. The decision met with an art-world outcry, including from Tawadros's predecessor of 20 years, Iwona Blazwick, who described the situation as "alarming" in The Art Newspaper.

When we meet for her first media interview since, Tawadros is sympathetic to the response. "It was horrible, horrible. You never want to lose talented staff and Iwona was hugely invested in this place," she says. She is also clear-eyed: "The scale of the challenge was such that we had to act swiftly to ensure that Whitechapel remained commercially viable," she says.

But some good news has arrived: New York's Ford Foundation has committed $500,000 over the next two years to the museum. The support — financially and personally — could not be more timely for Tawadros. Now, with a restructured organisation — permanent staff number 43 — and that grant, Tawadros is ready to outline her vision for the much-loved 122-year-old museum of contemporary art. "Whitechapel has the most amazing, radical and pioneering history and I am excited about translating that legacy," she says.

While her vision of the gallery's role is not wildly different from that of her predecessors, Tawadros has fashioned her plans for a changing audience. "Whitechapel is globally connected but locally embedded . . . It has long been the place where migrants came to educate themselves," she says, noting that in the early 20th century the Whitechapel's Judaica-strong library earned it the nickname "the university of the ghetto".

Now, the museum has added materials that reflect the area's Bangladeshi and growing Somali communities. "There are different waves of migrants," she says. She is proud too of the museum's heritage — when I visit, its library serves up a poignant reminder through Susan Hiller's "J Street Project" (2002-05), a film that documents the 303 roads in Germany whose names refer to a Jewish presence (Judenstrasse, Judenplatz etc).



Above: Gilane Tawadros, director of the Whitechapel Gallery. Above right: in 2012 Rachel Whiteread's 'Tree of Life' artwork, created from gold-plated leaves, was installed on the facade Elliott Gunn

Born in Egypt in the 1960s, Tawadros is the daughter of political exiles from that country and was brought up in London. "I grew up understanding two cultures and how you have to embrace what is different, unfamiliar and uncomfortable," she says. What is desperately lacking now, Tawadros feels, is a sense of hope. Her mission statement for the museum talks of "new possibilities for thinking, feeling and dreaming". She counters my suggestion that the latter in particular is a bit cheesy. "Dreaming is really, really important. There is so much fear, so much anxiety at the moment. If you're struggling, where is the space to find hopeful, expansive possibilities? Art can play a role in firing imaginations."

Perhaps with this in mind, Tawadros has organised for Zineb Sedira's "Dreams Have No Titles", a critically acclaimed installation made for the French pavilion at the 2022 Venice Biennale, to come to the gallery next year (February 15-May 12). The playful-looking work, based around a series of film sets in France, Algeria and the UK, warns of how economic suppression and racism have blocked emancipation.

A trained art historian, Tawadros believes strongly that the Whitechapel Gallery can offer meaningful art in an accessible way — "We don't have steps to get in, we don't have columns" — while not, she stresses, underestimating its audience. A deep thinker, she references the late academic and cultural relations pioneer Stuart Hall, her "mentor" and the chair of the Institute of International Visual Arts, an organisation that Tawadros founded in 1994 and ran until 2005 to champion the work of British-based artists from African and Asian diasporas. "Stuart saw no contradictions in communicating difficult ideas," she says.

Tawadros's forthcoming programme reflects Hall's perspective. This summer, the Whitechapel Gallery will — she thinks for the first time — open up all its spaces for free for an exhibition of artists, performers and thinkers, past and present, who interweave everyday life with art. The show is centred around a quote from the African-American writer James Baldwin: "Life is more important than art . . . and yet that is why art is important." Hiller's "J-Street Project" is part of this; also included are new works by Rana Begum and Janette Parris — the latter co-curates the exhibition alongside Tawadros (June 14-September 17). There will be four ticketed discussions (out of 14 events) that will cost £5 each, but free entry to the bulk of the programme is key. "You can't talk about accessibility without considering the cost of [visiting] exhibitions," Tawadros says.

Later this year, the gallery presents the first UK survey show of the French-born New York artist Nicole Eisenman, with sections on lesbian communities in the 1990s and American politics during the Trump years (opens October 10). The exhibition is organised by the high-profile curator Mark Godfrey, an arrangement made before Tawadros's time but an example, she says, of how the museum can work with a smaller staff to its advantage.

'I grew up understanding two cultures and how you have to embrace what is different, unfamiliar and uncomfortable'

"I want to bring in external voices, we can't know everything all the time from one place," she says. Overall, she says, "we need to be financially prudent but artistically brave."

Conscious of the noise around her appointment and unpopular restructuring, Tawadros is philosophical about her own role at the museum. "I'm not here to prove myself or to carve out my next job. I care deeply about Whitechapel Gallery and am here to safeguard it for the future. It has been around for more than 120 years, I'm just the next custodian of this extraordinary place."

whitechapelgallery.org

Zineb Sedira's installation 'Dreams Have No Titles' comes to the Whitechapel Gallery next year — Mathieu Carmona

Suave voice that transcends vagueness

OPERA

Don Giovanni
Glyndebourne, East Sussex
★★★☆☆

Alastair Macaulay

Outdoors, last Friday proved the most perfect day and evening of the year so far — and ideal weather for opening night of the Glyndebourne Festival season. Indoors, things were considerably less memorable. The opera was *Don Giovanni*, one of the three Mozart operas central to Glyndebourne repertory since this institution's foundation in the 1930s. However, you'd never know from this production that, for many people, this has always been the greatest of all operas.

As designed by Julia Hansen, Mariame Clément's staging is the least alluring modern-dress staging of anything (yes, anything) I can remember. If the idea is that this drama belongs to the world we know, then it's a world where we can't help cringing at the characters' fashion choices. This is *Don Giovanni* as bad-taste party. Zerlina and her bridesmaids are dressed in bright pink as short-skirted cowgirls; Masetto and his stag-night male chums wear antlers.

Hansen has designed act one to take place inside some dim, old-style multistorey hotel, with stairs, banisters and hall paintings. It feels wrong for every single character. In a touch of heavy-handed surrealism, while Giovanni's servant Leporello sings his catalogue of his master's female conquests, the paintings turn into portraits of bare-breasted women. In act two, the decor mainly suggests a variety of exterior spaces, some of them neon-lit, backed by palm trees. Bernd Purkrabek's lighting is particularly poor, often obscure but never poetic: faces and gestures are seldom well shown.

In the most curious feature of Clément's production, Don Giovanni does not directly kill the Commendatore. Instead the latter, attacking the former but falling down some steps, fatally injures his head on the ground. Giovanni places his head gently on the victim's chest as he dies, but then behaves as if taking rueful responsibility. It's possible that his guilt grows during the opera. But none of this is strikingly shown.

Although Clément has experience at Glyndebourne and elsewhere, her handling of basic theatrical issues — exits, entrances, groupings, timing — is remarkably vague. In act two, a silent chorus keeps materialising — and then departing, as if bored — during the soliloquising arias of various characters.

Evan Rogister, a German-American maestro making his house debut, conducted a performance with plenty of zip and nervous energy if not hellfire. For those of us who love to hear Mozart sung with judicious vocal ornaments — appoggiaturas and other embellishments — here they were. Michael Mofidian was an endearing Masetto; Mikhail Timoshenko, after an uneasy first act, was vivid as a bespectacled, baffled Leporello. Venera Gimadieva (Donna Anna), Ruzan Mantashyan (Donna Elvira), Victoria Randem (Zerlina) and Jerzy Butryn (the Commendatore) all tended to employ overblown vibrato when putting any pressure on their voices; Oleksiy Palchykov applied an unconvincingly beefy approach to Don Ottavio's arias.

In the title role, Moldovan baritone Andrey Zhilikhovsky was firm-lined and suave in looks, voice and phrasing. Apart from three brief moments when he seemed to lose his cue, he was a constant source of humour, expressiveness and allure.

He seems to change the size and texture of his voice to his surroundings and his role: whereas his Marcello in *La bohème* at Covent Garden last autumn had big-scale macho force, his Giovanni, in the smaller space of Glyndebourne, sounded disarmingly intimate, often wonderfully hushed. He plants words as if directly into your ear.

To July 15, glyndebourne.com

Victoria Randem and Andrey Zhilikhovsky in 'Don Giovanni' Bill Knight

FT BIG READ. INDUSTRIALS

Chips: the crackdown on risky chemicals

Evidence that the materials vital for semiconductor production are toxic for humans and the environment is mounting. But safe alternatives are many years away.

By Cheng Ting-Fang

When Mark Newman walked into the lobby of a Tokyo hotel for a customer conference late last year, the chief executive of the US chemical giant Chemours had the rare experience of being mobbed.

"I felt like I was a rock star," Newman recalls. "I was swarmed by people saying: we need more."

The "more" in question is a class of chemicals known as PFAS (per- and polyfluoroalkyl substances), critical to the production of everything from smartphones and firefighters' suits to aircraft and electric vehicles — but especially to microchips.

Anyone trying to secure supply for this year was going to be disappointed. One key PFAS, Newman says, "was completely sold out".

But the chemicals so instrumental to chipmakers and to the development of the world's data-led economy also have the potential for significant health and environmental effects.

Policymakers are increasingly concerned over the risks of these "forever chemicals", so called because they do not break down easily in the environment. The chemicals have been linked to fertility issues, reduced foetal growth, liver disease and increased risk of cancer in humans.

In March, the EU began a public consultation on proposals to ban the whole class of up to 10,000 chemicals, with a 13.5-year "transition" period for the chip industry. If implemented it would be "the broadest restriction [of chemicals] . . . in history," according to Frauke Averbeck, who leads the proposal for Germany, one of the five European nations behind the campaign for a ban.

Some chemicals companies are not waiting around for regulation. In December, 3M announced it would halt PFAS production by 2025, reasoning that the risks were not worth the potential profit. It was already facing multiple lawsuits over past pollution.

The moves have set off alarms in the headquarters of the world's top chipmakers and their suppliers, a long list of leading industrial companies including Intel, Infineon, TSMC, STMicroelectronics, BASF and many others.

After 3M's decision, Intel and TSMC summoned suppliers to meetings. "They want to make sure chip production can continue and won't be affected because of the 3M exit," says one US chip equipment supplier to TSMC and Intel. Suppliers were also quizzed on the implications of a European ban and growing restrictions in the US.

Even with the EU's proposed transition period, chipmakers and their suppliers will need to develop a whole new class of chemicals and overhaul production processes across multiple sectors. Many industry insiders think it is not possible in such a timeframe.

But a ban with no substitute chemicals to take the place of PFAS could threaten Europe's heavily subsidised ambition to snare 20 per cent of the global chip market by 2030 — and send ripple effects across a much broader swath of industries, from cars to energy. The quandary demonstrates the difficulty of meeting the demands of modern technology without ruining human health and the environment.

"Without some PFAS, semiconductor manufacturing is simply not possible," says a leading European chip executive. "There are no alternatives in the market yet."

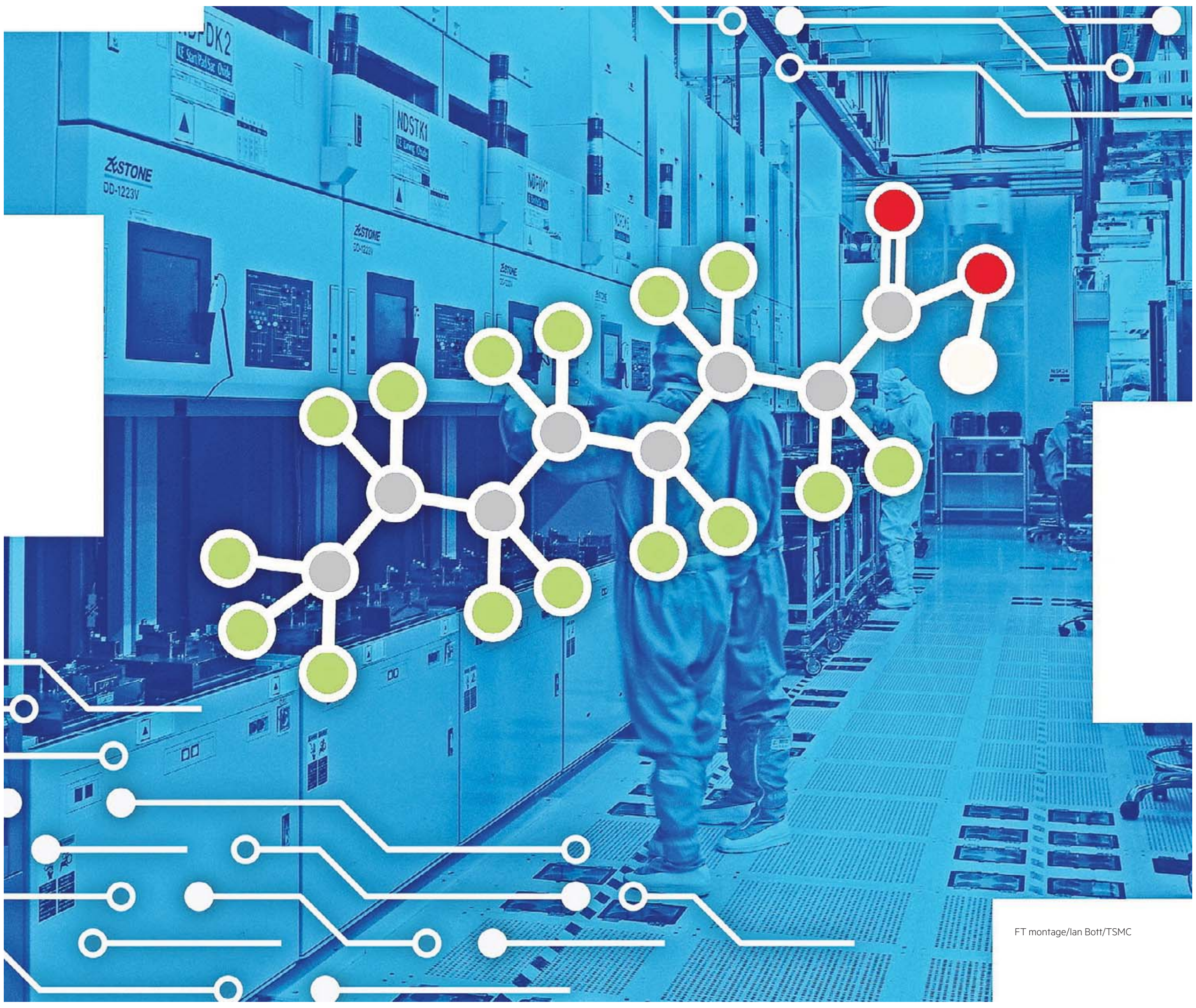
> 'A lot of research will be needed to phase out PFAS. It's a big challenge but we need to start the exploration now'

Built on a chain of linked carbon and fluorine atoms, PFAS contain one of the strongest bonds in organic chemistry, making materials derived from them highly resistant to water, oil and heat.

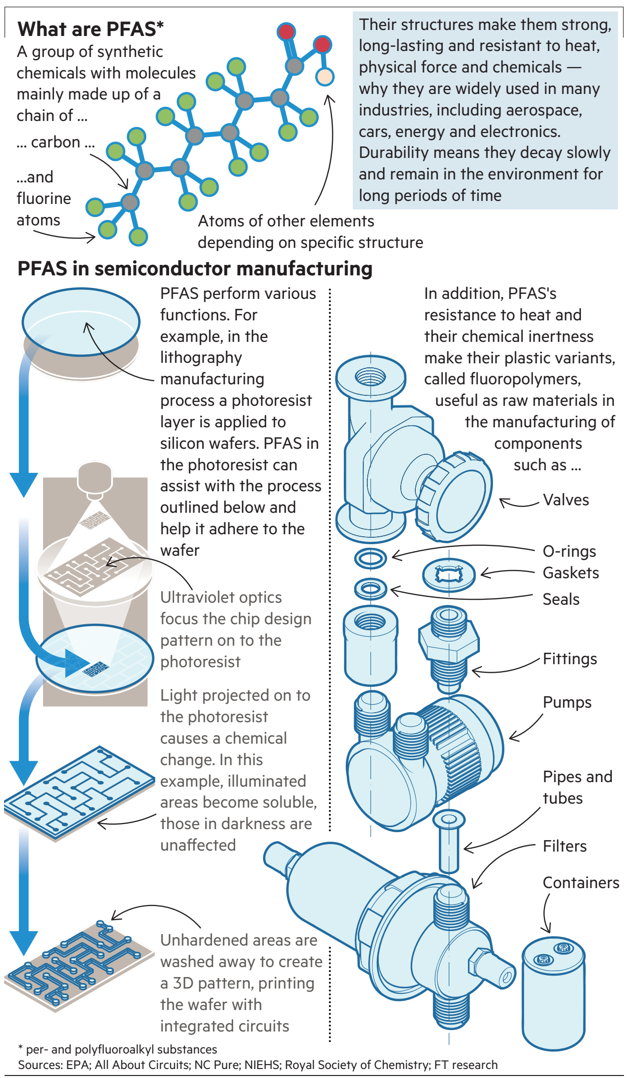
Companies such as Chemours, Daikin of Japan and European chemicals makers Arkema and Solvay are leaders in production of these wonder materials.

In chipmaking, components made of or coated with PFAS are highly resistant to the corrosive chemicals used, guaranteeing the purity of the manufacturing processes and underpinning the quality of cutting-edge chips.

But the bonds are so strong that PFAS molecules in discarded materials do not break down easily, and instead accumulate in the environment and human organs. Scientists are increasingly concerned about severe health consequences. Studies have found PFAS in the blood of 99 per cent of Americans and unsafe levels in the drinking water and soil of both US and European citizens. The US Environmental Protection Agency has warned that even near-zero levels of PFAS could pose a threat to human health.



FT montage/Ian Bott/TSMC



* per- and polyfluoroalkyl substances
Sources: EPA; All About Circuits; NC Pure; NIEHS; Royal Society of Chemistry; FT research

According to the Nordic Council of Ministers, European PFAS-related health costs could reach up to €84bn a year for the treatment of diseases linked to exposure such as liver damage, kidney cancer and thyroid disease. The cost of reversing environmental and health damage could be as high as €2.4tn per year, says Chemsec, a non-profit partly funded by the Swedish government. At present, there is not an effective way to clean the environment of PFAS on a large scale.

A 'differentiated' approach

But replacing PFAS is no simple task. Fluoropolymers, the hard plastic type of PFAS, are viewed by many chip and chemical executives as the most challenging to substitute. They are used to make critical coating materials and chemical-resistant parts in the chip supply chain, such as in factory pipes, pumps and seals. The semiconductor sector consumes 45 per cent of the fluoropolymers used in the electronics industry, according to the European Chemicals Agency.

One leading chemicals supplier experimented with replacing some of the 153,000 PFAS-based gaskets used in its German manufacturing plant. "We tested many different materials, including . . . the plastics that Lego bricks are made of. But the leakage of chemicals . . . were 1,000 times higher than the PFAS-based ones. That makes our plant not safe at all," the executive says.

A number of PFAS producers — Chemours, Daikin, 3M, AGC, Arkema, Solvay and Shandong Dongyue — control about 60 per cent of the global fluoropolymers market. Only two — Chemours and Japan's Daikin — produce the specific high-end plastic that can be turned into the equipment needed in advanced chipmaking, FT checks confirmed.

The regulatory uncertainties are hindering plans to expand capacity to meet rising demand from the chip sector, says Chemours' Newman. The prospective EU ban would sabotage Europe's semiconductor plans, pushing investment out of the bloc and, he adds, would be "unenforceable".

Many of the chemicals companies, such as Bayer, Arkema and Solvay, argue that the EU should take a "differentiated" approach to regulating PFAS. Those not proven to be unsafe, and which are critical to key industries, should be allowed, several executives argue.

But Chemtrust, an environmental charity, estimates it could take thousands of years to determine the safety of every compound because there are so many of them. It took several years to get global agreement on the elimination of just two types of PFAS under the Stockholm Convention on Persistent Organic Pollutants.

"Differentiated" has been tried before. When certain chemicals were restricted in the past, says Professor William Dichtel, part of a team at Northwestern University that has developed a method to break down PFAS, "they just replaced them with other PFAS which now show evidence of being just as bad or even potentially worse.

"By regulating them you create a tremendous financial incentive . . . to provide solutions that are safer."

The clock is ticking

Some chemists and environmentalists believe that the semiconductor industry has simply not tried hard enough to find safer solutions.

Yet companies insist they have tried to find alternatives. TSMC — the world's biggest contract chipmaker with Apple, Nvidia and Qualcomm as clients — has been working on substitutes since 2006 and says it has "made progress" in photolithography, which places precise integrated circuits on silicon wafers.

> 'By regulating them you create a tremendous financial incentive . . . to provide solutions that are safer'

While TSMC says it wants to cut out PFAS in the future, it will not say when. "It will take time to verify new chemicals and materials that we are using in the manufacturing processes," it says.

Bosch, the German engineering company which supplies chips to the car industry, also says that more time for change is needed, echoing the view that a legal rule to ban PFAS "too early" will endanger Europe's competitiveness.

Kevin Gorman, senior vice-president at German pharma giant Merck, a key supplier to the chip industry, says the company's scientists have been working on PFAS-free alternatives since 2020. "More work is required to bring them to the level needed for commercial use," he says. "We are still several years away."

But it is clear the clock is ticking. Apple, as one of the tech industry's biggest users of the chemicals, late last year committed to phasing them out over the long-term.

Such pledges have opened up opportunities for potential disrupters. Massachusetts-based Impermea Materials is working on PFA-free solutions for food packaging and textiles, and is now venturing into tech.

"No one was willing to make the switch to non-PFAS materials because their argument was that PFAS is working tremendously better than all the alternatives," says David Zamarin, Impermea's founder and CEO. "But now with so many regulations, things could change."

But customers will have to accept that the newer products will initially cost more. "Our solutions, in one case for an electronics coating, could be three times more expensive than what our potential clients are looking for," says Zamarin.

Even those who believe that PFAS should be banned agree with the industry, however, that alternatives will not be available soon. Zhanyun Wang, a PFA specialist and researcher with Empa, Swiss Federal Laboratories for Materials Testing and Research, estimates it will take more than 10 years for any new chemicals to be adopted widely.

"In some use areas, such as the semiconductor industry, a lot of research will be needed to phase out PFAS. It's a big challenge but we need to start the exploration now," says Juliane Glüge, an environmental scientist and PFAS expert with Swiss university ETH Zurich.

The case for regulation

The FT contacted more than 20 chip suppliers in Europe, the US and Asia, to ask about their PFAS plans.

Only a few, including TSMC, Merck and Bosch, said they had a long-term reduction plan to eliminate the chemicals. Intel has pledged no "new" PFAS use in its supply chain.

Companies such as Samsung, Nvidia, Qualcomm, Broadcom, Texas Instruments, GlobalFoundries, ADI, ASML, NXP, Infineon, STMicroelectronics, Lam Research, Applied Materials and BASF declined to respond, or directed questions to industry associations and lobby groups.

One of those associations is the Sustainable PFAS Action Network, based just outside Washington DC, which claims that any restrictions on PFAS could affect US industries that support 6.2mn jobs and contribute more than $1tn towards US gross domestic product.

The industry has also enlisted advisers to petition Brussels hoping to delay the ban or gain exemptions. A quarter of companies spending more than €3mn a year on lobbying the EU are leading chemical producers: Bayer, Dow Europe and BASF.

According to LobbyFacts, a tool for investigating lobbying at EU institutions, together they spent €12mn in 2022, with either PFAS or the EU framework to regulate toxic chemicals, called Reach, listed as areas of focus.

The European Chemical Industry Council spent €10mn last year on EU lobbying generally and had at least five high-level meetings with EU officials in the second half of 2022 on Reach, under which any PFAS regulation would fall.

"The sector has consistently been able to water down or postpone regulation aimed at protecting human health and preventing environmental pollution," says Vicky Cann, a Corporate Europe Observatory researcher, a campaign group.

Regulation is needed to level the playing field for companies anxious about competitive disadvantage, says Mikael Kahn, a PFAS expert at Suez, one of the world's leading waste and water groups, based in Paris.

"It will take billions of dollars of investment from the chip and electronics industry every year to tackle PFA pollution," Kahn says.

Companies are being pursued in the courts over the pollution they have caused; when 3M was sued by the Belgian government in 2022, it had to pay $581mn for clean up costs. Chemours sets aside hundreds of millions of dollars every year to clean up past pollution.

"If there are no regulatory pressures, no chipmaker or tech company would want a significant cost hike or to spend a lot of money if they are the only ones to shoulder the cost," Kahn adds.

Some chemical industry lobbyists admit that companies will need to accept the inevitability of tighter restrictions.

Instead of fighting a ban, "the better approach might be seeking unlimited time for [exemptions to the ban] for some vital industrial applications after the restriction goes ahead", says Andreas Geiger, managing partner of Brussels-based Alber & Geiger, an EU government relations law firm.

That does not mean that the chip industry should continue with the status quo, say PFAS critics.

Martin Mulvihill, a chemist and founder of Safer Made, a cleantech venture capital firm, believes the chemicals are overused. Not every task requires the high levels of performance offered by these materials.

"We have already seen in certain sectors like food and textile that we absolutely have been able to eliminate PFAS," Mulvihill says.

"I'm not saying we can get to 100 per cent elimination [for the chip industry] but I bet we can get rid of 70-80 per cent."

Additional reporting by Peggy Hollinger
Graphic illustration by Ian Bott

The FT View

FINANCIAL TIMES
'Without fear and without favour'

ft.com/opinion

Taking stock of the G7 Hiroshima summit

Show of unity on Russia and China needs to be followed up with concrete actions

Grand summits of the world's wealthiest and most powerful nations are often criticised for a lack of output beyond vaguely phrased promises for co-operation and symbolic photo opportunities. Yet, in a time of deep geopolitical rifts — with the world's two largest economies butting heads and Russia's continued aggression in Ukraine — summits take on greater significance in helping to forestall disunity.

In this light, the G7 meeting in Japan over the weekend had some notable achievements. The three-day gathering culminated in a broad but more unified approach by member nations on the war in Ukraine and China's growing assertiveness.

The convergence should not be taken for granted. But ultimately, the success of the Hiroshima summit will be determined by its ability to turn communiqués into concrete global action — and by that measure, considerable work lies ahead.

The summit made a welcome effort at broadening international support for Ukraine. The G7 reaffirmed their commitment to countering Vladimir Putin's aggression, and the invitation of the Ukrainian President Volodymyr Zelenskyy was also significant. It gave Zelenskyy a global platform, allowing him to press his agenda for peace in Ukraine also to the invited leaders of emerging powers — which are much more sceptical. The US decision to back allies in supplying F-16 fighter jets and help train Ukrainian pilots, alongside a new $375mn military aid package from Washington, was a particular boost for Kyiv too.

On China, the group critiqued Beijing's use of "economic coercion", urged it to use its influence to push Russia to withdraw troops from Ukraine, and called for a "peaceful resolution" to tensions with Taiwan. Most significant was coalescence around "de-risking" economic relations with China, rather than "decoupling" — echoing the calls of European Commission President Ursula von der Leyen. Given differing economic interests, the west has been conflicted on how best to approach China's vast state-led dominance of critical global supply chains, while also de-escalating tensions with Beijing. The G7 agreement is a step forward in providing a co-ordinated framework.

Garnering support from the so-called "global south" will however continue to be a major challenge for the G7. Economic ties between these nations and Russia and China are a barrier. Indeed, India has been gorging on cheap Russian oil, and bilateral trade between Brazil and China has surged.

> Garnering support from the so-called 'global south' will continue to be a major challenge

With China also building ports and doling out billions in aid and investment across Latin America, Africa, and South East Asia, stronger dialogue will only go so far. Limited progress on climate commitments at the summit will also do little to convince poorer nations to boost their own efforts. The G7 will need to follow through on promises to support developing nations with investment and climate finance.

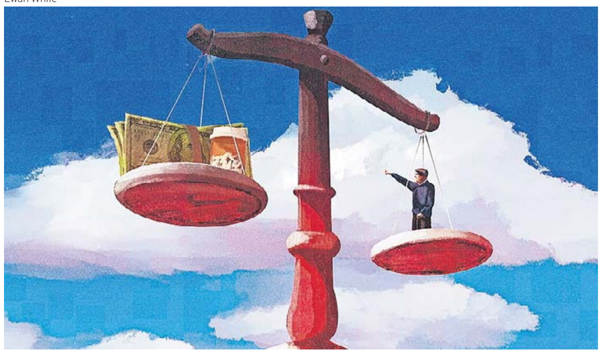
The success of the G7's strategy to "de-risk" ties with China will also hinge on whether there is common understanding on what precisely it means. Outlining and agreeing on the specifics will be the next step. De-escalating tensions with China will also not be simple, particularly if ambiguities remain.

With the G20 summit set to take place in New Delhi later this year, the challenge now is to show the "global south" that it is not simply an afterthought. A unified approach on Russia and China among seven of the world's major economic powers is a step in the right direction. But to make the strides ahead, and build a global compact, the G7 will need to accompany its words with money and greater detail.

Opinion Politics

Liberalism's problems are problems of success

Ewan White



Stephen Bush

If you live in a rich country, all things being equal, you are more likely to live alone, more likely to suffer from depression or anxiety and less likely to have children.

One movement that thinks it has the solution to these problems is national conservatism. Its message is that politicians should champion the constitutional, cultural and religious traditions of the country in question.

National conservatives are right about one thing: most of the problems that the rich world struggles with are problems of success. These range from comparatively minor inconveniences such as gridlock and overcrowded trains to existential threats such as climate change and artificial intelligence.

But the difficulty for national conservatism and other populist movements is that tackling these problems

> Tackling these is hard for populist movements as they are bound up with things we want to keep

is hard, in part because they are so bound up with things we want to keep.

One example is the rising cost of healthcare in the rich world. Most high-income countries have record numbers of people living beyond 65, and their citizens are now much less likely to die from heart attacks or strokes. Inevitably, this means higher healthcare costs, but no one wants to go back to an age when cardiovascular medicine was less effective.

Then there are social problems whose causes are also problems of success: depression, anxiety and falling birth rates. And here the national conservatives are not wholly wrong. We have consistent evidence that religious attendance positively correlates with greater life satisfaction. But the evidence also shows that as education levels rise, so too does atheism.

Now I'm not saying there are no highly educated and economically successful religious believers. Nor should we lazily equate atheism with greater levels of liberalism and anti-populism. The UK's major cities were, for the most part, reliable opponents of Brexit. But they are also more religious than rural areas or small towns.

Nevertheless, broadly speaking, we should assume that as people and places become better educated and more technologically advanced, they will become more secular and receive fewer of the social and mental health benefits of religiosity.

A similar story can be seen in falling birth rates. Most countries in the rich world have birth rates below replacement rate — that is 2.1 children per woman. Again, this is a problem of success: women have greater economic opportunities, divorce is easier, and people have both better access and encounter fewer legal barriers to contraception, both before and after conception. Yet it comes at a cost: falling birth rates mean shrinking populations and heighten the economic pressures of ageing societies.

For national conservatives, whether the problem is the blues or birth rates, the solution to the downsides of secularism is more religion; and the antidote to falling birth rates is bigger subsidies for "traditional" families and stigmatisation of people whose lifestyles fall outside the two-parent norm.

There are many objections one can make to this style of politics. But it also doesn't work on its own terms. Hungary, one of the laboratories of national conservatism, still has a birth rate below replacement rate, despite giving families grants to buy new homes, as well as other tax benefits.

Nonetheless, liberals should remember the quantum of insight at the heart of national conservatism: poor mental health, loneliness, social isolation and declining populations are all real problems.

One frequently mooted liberal response to declining populations is simply to increase immigration, which works in the short term. But countries, like the UK, that do well at integrating migrants rapidly find that the children of immigrants experience and struggle with the same problem as those who've been in the country for generations. Ethnic minority Brits are, on average, more religious than white Britons: but the mixed race children of both are more liberal and more likely to be of "no religion" than any other group in the UK.

Not worrying about falling birth rates in the rich world in 2023 because you can fix the problem via immigration is a bit like being relaxed about climate change in 1970 because no one in the developing world is going to buy a second gas-guzzling car. It is true now, but it is not going to remain true for long.

Sooner or later, the rich world's problems of success will become universal ones. Our difficulties in tackling climate change and other earlier problems of success should make liberals more focused on trying to identify solutions to new problems before they become global challenges.

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UK and EU take welcome step to restore trust

News of the establishing of an official EU-UK Financial Regulatory Forum is the latest example of a definitive warming of relations between Brussels and London and one we should all be welcoming ("UK-EU thaw signals regulatory accord", Report, May 18).

Some argue this initiative is merely a bureaucratic talking shop. I disagree. It may look like a purely technical forum but is an important symbol of new European solidarity and a pragmatic bridge that is long overdue if we want our continent's financial services industry to compete and thrive on a global stage. Despite Brexit we still share many goals, like unlocking and channelling the flow of capital towards vital energy transition projects, and we continue to have a lot to learn from each other on new trends. These objectives are almost always better considered and delivered together.

Indeed, any exploration of divergence from existing EU rules or creating new ones — which will happen — should have a formal channel in place to air concerns or share ideas. Going it alone risks unnecessary surprises and duplication, less thorough and more burdensome rules, and ultimately Europe being less competitive. Finally, the most important benefit of the discussions which will be taking place at this forum will be to re-establish the trust that has been severely eroded over the past few years.

From that base, more helpful collaboration and activity may grow. We should all hope it does.

Nicolas Mackel
Chief Executive, Luxembourg for Finance (Agency for the Development of the Financial Centre), Luxembourg

South Africa is ignoring its lodestar, siding with Putin

David Pilling, the FT Africa editor, is right to castigate South Africa for cosying up to Russia and for what, right now, seems a haphazard, even chaotic foreign policy ("South Africa and the limits of having it both ways", Opinion, May 19).

Its failure to unequivocally condemn Russia's invasion of Ukraine is so clearly at odds with democratic South Africa's lodestar of upholding sovereignty where it is an expression of a people's right to self-determination and with the liberation movement's own experience defeating apartheid.

But South Africa is not wrong to want to protest against an unequal world order set on selective application of the rules and to want to secure greater participation for itself and those states that have historically been relegated to the sidelines.

In this it should be able to have it both ways: to align with the west on matters where its principles demand it do so, as with Russia's war on Ukraine; and to support those formations, like the Brics, which counter western hegemony and may help usher in a more participatory global order. Of course, that requires that it find its principles first.

Nicole Fritz
Director, Helen Suzman Foundation
Johannesburg, South Africa

Russian oil shipments are accident waiting to happen

I have become concerned about the 500 or so tankers — if non-tankers are included it is another 500 ships — that are now trading Russian oil ("Russian sanctions heighten oil spill concern", Interview, April 3).

These tankers are among the oldest in the world and would in normal circumstances have been scrapped.

Half are owned by Russian and Iranian interests and the other half by shipping interests in India, and the United Arab Emirates and Dubai ("Mystery Mumbai company emerges as big transporter of oil from sanctions-hit Russia", Report, May 5).

These ships lack insurance coverage by the joint marine insurance industry body based in London which covers 90 per cent of tonnage in the world.

They are trading without insurance!

If an accident happens, and it will, the outside world would most probably have to deal with it.

Russian sea-based oil exports are today back to levels similar to before the invasion of Ukraine.

Once refined and blended, the oil is untraceable.

The international community needs to take urgent action before a disaster happens.

Admiral Lord West of Spithead
House of Lords, London SW1, UK

Argentina has one last shot to rescue its economy

Yet again, by the measures it is taking, the Peronist government of President Alberto Fernández in Buenos Aires is worsening the crisis with which it and the long-suffering Argentine electorate are struggling.

What on earth is the point of raising interest rates further ("Argentina battles growing economic crisis", Report, May 15) when the economy is already in negative-growth territory.

The country's budget deficit is rising to 5 per cent of gross domestic product and, even without higher interest rates, the public debt to gross domestic product ratio is on its way to 90 per cent or more.

What is the attraction to anyone, whether inside Argentina or outside, of interest rates at 96 per cent or more, when those annualised rates can so easily be wiped out by the sort of exchange rate depreciation of 2.5 per cent over 48 hours that is plausibly on the cards?

The country is way beyond the debt and deficit thresholds at which a rise in interest rates might persuade holders of its currency to stick with it.

Quite the contrary, the interest rate rise can now only act as a further *sauve qui peut* to anyone who has not yet fully bailed out of the peso.

The mess is largely of its own making, if you consider how high Argentina's staple grain and energy prices have been for the last 15 months. But the government has one realistic shot at escaping this malaise.

That course would be to persuade one or other among its already much ill-used creditors — either the IMF, the People's Bank of China or any other creditor — to grant it one more line of credit, conditional this time on no further policy gimmicks.

Michael Kuczynski
Pembroke College
University of Cambridge
Cambridgeshire, UK

Fed and Treasury have the tools to avoid debt default

There is an off-ramp from the US debt-ceiling crisis entirely consistent with both the US Constitution and existing federal statutes ("What to expect as US nears 'unthinkable' debt default", Report, May 16).

If the Congress has appropriated funds, they cannot legally be impounded by the executive branch. Therefore, the Treasury can — indeed must — keep writing cheques to pay what the Congress has already mandated shall be spent.

The Federal Reserve acts as the bank of the Treasury and honours its cheques by crediting the Federal Reserve account of the presenting bank and debiting the account of the Treasury. By statute, the Fed can also acquire Treasury cheques without limit in the "open market" — that is, not directly from the Treasury, because they are direct US obligations.

It does not need to debit the Treasury's account if it continues to give credit in full face amount, for all Treasury cheques presented to it. It can hold them in its asset portfolio.

Between them, the Treasury and the Fed have all the tools they need to prevent a catastrophic debt default.

David Gruber
East Hampton, NY, US

Pensions — right on some things, wrong on others

John Ralfe is right. Defined benefit pensions are not dead yet (FT Money, May 13). He is also right to point to the gap in benefits between public sector DB schemes and private sector defined contribution schemes. Where he is wrong is his presumption that improvements in DC pensions, to better match public service provision, are unsustainable. How much better to improve inadequate benefits than ruin the prospects for those who do have decent pensions.

He is also wrong to state that current public service scheme benefits are "much more generous" than what he describes as "traditional private sector DB". This ignores the fact that the former are based on average earnings, revalued in line with prices, while the latter use final earnings. The age at which benefits are payable has also been increased. The overall effect of these changes in public service pension benefits introduced in 2015 has been to reduce their cost, compared to that for "traditional" benefits.

Finally, he suggests that public service workers should fund their own pay increases by cutting back on their pensions. Robbing Peter to pay Peter. The unions have made it clear they are not interested in such an approach. The employer isn't interested either.

Lord Davies of Brixton
House of Lords, London SW1, UK

Next generation's challenge is to value natural capital

Andy Haldane's helpful "house inheritance" analogy (Opinion, May 16) can be usefully extended when thinking about how we value the current and future health of the planet.

It would be undesirable to bequeath a house with an enormous mortgage to the next generation; it would also be undesirable for that house to have a barren garden, be uninsurable or impossible to sell because of flood risk. How we assess the value of natural capital needs to change if we are to avoid such a dubious gift.

The IMF puts it quite neatly when valuing a whale. A whale fished from the sea might be worth thousands as meat. But the whale's value to the earth's health, swimming happily about our oceans, is priced at $2mn.

How we value assets — be they houses or whales — will determine the prosperity of future generations and their dependence on the health of our planet.

Ben Stafford
Chief Executive, Regenerate Asset Management, Brough, East Yorkshire, UK

Act on the science or give green light to developers?

The forecast by the World Meteorological Organization ("Global warming likely to top 1.5C by 2027", Report, May 18) is a warning that we are perilously close to triggering even more devastating climate change impacts on millions of lives and livelihoods across the world.

The UK government hosted the COP26 UN climate change summit in 2021, pledging to keep alive chances of limiting warming to no more than 1.5C by cutting carbon dioxide emissions to zero by 2050. But annual global emissions have continued to rise.

The government is now considering whether to allow the development of a large new oil and gasfield, Rosebank, off the west coast of Shetland. The UN's Intergovernmental Panel on Climate Change concluded in March that existing fossil fuel infrastructure around the world would cause a breach of the 1.5C threshold without further efforts to stop emissions from reaching the atmosphere.

Will the government act on the science, or instead give the green light to Rosebank and make it even more difficult for the world to avoid dangerous climate change?

Bob Ward
Policy and Communications Director, Grantham Research Institute on Climate Change and the Environment
London School of Economics and Political Science, London WC2, UK

A veritable acronym soup

Pilita Clark's piece on the relentless rise of acronyms (Work & Careers, May 15) got me thinking of how the IT department of say, a magic circle legal firm in the City, might now want to refresh its promotional material to send to its high profile clients.

It might go something like this:

"Welcome to our firm. We're happy to announce we're now working with MOTS, GOTS, and COTS and with some exciting new generative AI products from Open AI, GPT-3 and Dall-E, all intended to assist with MIFID, NATO and other major agencies.

Please note for BACK end, we're using DevOps and OOPs. If using API, just call SID. If WFH, good luck."

Perhaps the client's response might just be WTF!

Alastair Conan
London CR5, UK

Opinion

Building AI responsibly is the only race that really matters

Sundar Pichai

This year, generative AI has captured the world's imagination. Already, millions of people are using it to boost creativity and improve productivity. Meanwhile, more and more start-ups and organisations are bringing AI-powered products and technologies to market faster than ever.

AI is the most profound technology humanity is working on today; it will touch every industry and aspect of life. Given these high stakes, the more people there are working to advance the science of AI, the better in terms of expanding opportunities for communities everywhere.

While some have tried to reduce this moment to just a competitive AI race, we see it as so much more than that. At Google, we've been bringing AI into our products and services for over a decade and making them available to our users. We care deeply about this. Yet, what matters even more is the race to build AI responsibly and make sure that as a society we get it right.

We're approaching this in three ways. First, by boldly pursuing innovations to make AI more helpful to everyone. We're continuing to use AI to significantly improve our products — from Google Search and Gmail to Android and Maps. These advances mean that drivers across Europe can now find more fuel-efficient routes; tens of thousands of Ukrainian refugees are helped to communicate in their new homes; flood forecasting tools are able to predict floods further in advance. Google DeepMind's work on AlphaFold, in collaboration with the European Molecular Biology Laboratory, resulted in a groundbreaking understanding of over 200mn catalogued proteins known to science, opening up new healthcare possibilities.

Our focus is also on enabling others outside of our company to innovate with AI, whether through our cloud offerings and APIs, or with new initiatives like the Google for Startups Growth program, which supports European entrepreneurs using AI to benefit people's health and wellbeing. We're launching a social innovation fund on AI to help social enterprises solve some of Europe's most pressing challenges.

Second, we are making sure we develop and deploy the technology responsibly, reflecting our deep commitment to earning the trust of our users. That's why we published AI principles in 2018, rooted in a belief that AI should be developed to benefit society while avoiding harmful applications.

> Fulfilling the potential of artificial intelligence is not something one company can do alone

We have many examples of putting those principles into practice, such as building in guardrails to limit misuse of our Universal Translator. This experimental AI video dubbing service helps experts translate a speaker's voice and match their lip movements. It holds enormous potential for increasing learning comprehension but we know the risks it could pose in the hands of bad actors and so have made it accessible to authorised partners only. As AI evolves, so does our approach: this month we announced we'll provide ways to identify when we've used it to generate content in our services.

Finally, fulfilling the potential of AI is not something one company can do alone. In 2020, I shared my view that AI needs to be regulated in a way that balances innovation and potential harms. With the technology now at an inflection point, and as I return to Europe this week, I still believe AI is too important not to regulate, and too important not to regulate well.

Developing policy frameworks that anticipate potential harms and unlock benefits will require deep discussions between governments, industry experts, publishers, academia and civil society. Legislators may not need to start from scratch: existing regulations provide useful frameworks to manage the potential risks of new technologies. But continued investment in research and development for responsible AI will be important — as will ensuring AI is applied safely, especially where regulations are still evolving.

Increased international co-operation will be key. The US and Europe are strategic allies and partners. It's important that the two work together to create robust, pro-innovation frameworks for the emerging technology, based on shared values and goals. We'll continue to work with experts, social scientists and entrepreneurs who are creating standards for responsible AI development on both sides of the Atlantic.

AI presents a once-in-a-generation opportunity for the world to reach its climate goals, build sustainable growth, maintain global competitiveness and much more. Yet we are still in the early days, and there's a lot of work ahead. We look forward to doing that work with others, and together building AI safely and responsibly so that everyone can benefit.

The writer is CEO of Google and Alphabet

Ukraine feels the pressure of expectations

GLOBAL AFFAIRS
Gideon Rachman

Ukraine has just had a diplomatic triumph. Now the country is under pressure to follow up with a military triumph.

After the pomp of the G7 summit in Hiroshima, the focus will switch back to the brutal realities of warfare in eastern Ukraine. The diplomatic and military support offered to Volodymyr Zelenskyy at the G7 was a big boost to the Ukrainian president. But the danger is that it could be remembered as the high watermark of international backing for Ukraine.

The Ukrainians know that the best way of maintaining western support is to make dramatic progress on the battlefield. But Russian claims that they have finally taken control of the bitterly contested, largely destroyed town of Bakhmut underline how challenging that could be.

There was no hint of this international pressure on Zelenskyy in the communique issued by the G7. The group used the familiar formula that they will back Ukraine for "as long as it takes". But the unofficial message is a little more complicated: "As long as it takes. But it would be better if it doesn't take too long." This sense of urgency does not reflect any lack of sympathy for Ukraine in the key western governments. Instead there is a concern that, if Kyiv's much-anticipated counter-offensive fails to turn the tide on the battlefield, it will be difficult for the country's backers to maintain the current level of political, financial and logistical support.

The mounting pressure on Ukraine is closely linked to the 2024 US presidential election. Donald Trump's emergence as the Republican frontrunner increases the fear that the next US president will radically change policy on Ukraine. Trump has bragged that he could end the war in a day, a rather different message from "as long as it takes".

Even a presidential election campaign dominated by Trump is likely to visibly undermine America's bipartisan consensus on Ukraine. All sorts of arguments against backing Kyiv — from the costs of the war to the dangers of escalation — will get an airing. Opinion polls in the US already show some decline in support for Ukraine.

All this gives Vladimir Putin reason to hope that, if he can keep Russia fighting for another 18 months, the Trumpist cavalry might appear over the horizon. The Kremlin is already flirting heavily with the former US president and his supporters. Russia's latest list of sanctioned Americans includes people who have nothing to do with Ukraine, but who are on Trump's unofficial domestic enemies list — such as Brad Raffensperger, the official who resisted Trump's entreaties to "find" him some more votes in Georgia.

Given that the US supplies most of the military support to Ukraine, attitudes in Washington are critical. A shift in the political atmosphere in the US will also inevitably seep into Europe. The disruptions to the energy market caused by the war have already led European countries to spend around €800bn on energy subsidies. Economic discontent could translate into rising support for populist parties of the far right and the far left that are sympathetic to Russia.

Then there is the question of arms supplies. Both the US and Europe have all but emptied their inventories of relevant munitions, such as artillery shells, in their efforts to keep Ukraine supplied. Without converting to a wartime economy, western arms factories cannot keep up with the pace of the battle. The fighting is so intense that, as one western politician puts it, "the Ukrainians are consuming in hours what we produce in weeks". Western national security officials have had to moonlight as arms-dealers — ringing around global capitals, from Seoul to Islamabad — to scrounge new supplies of missiles and other weapons to be sent to the front.

> A shift in the political atmosphere in the US will also inevitably seep into Europe

The US and the Europeans believe that their efforts have worked and that Ukraine now does have enough weaponry to mount a serious offensive. But the west's armaments cupboard is now looking pretty bare. It will not be fully replenished by 2024 — although by that time the Ukrainians will be able to deploy the fighter planes that were promised to them last week.

Ukraine's current counter-offensive is likely to begin quietly with a series of probing missions that will look for weaknesses in the Russian line. But the extent of those Russian weaknesses remains the great "known unknown" of the war.

Some western officials, who have worked closely with Kyiv, believe the Ukrainians have a good chance of breaking through Russian lines and threatening Crimea. Others warn that the Russians are dug in — and that inexperienced Ukrainian troops may struggle to gain ground. The pessimists fear that, if the war is still deadlocked next year, Putin may manage to mobilise hundreds of thousands of new troops for the next phase of the conflict. Although the Ukrainians have higher morale and better tactics, Russia has a larger pool of potential soldiers.

But even if Ukraine fails to make a breakthrough and western support for Kyiv does begin to falter, that will not be the end of the matter. Ukrainian officials point out that, unlike their western backers, they will never have the luxury of walking away from the conflict. Dmytro Kuleba, Ukraine's foreign minister, likes to quote an adage attributed to John Lennon: "Everything will be OK in the end. If it's not OK, it's not the end."

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Africa needs international help to avoid a lost decade

Hanan Morsy

African countries are facing a cost of living crisis, tightening global liquidity and worsening climate shocks. All of this is intensified by unsustainable debt burdens, which have been deepened by the devaluation of local currencies against the dollar and the US Federal Reserve's interest rate hikes.

As a result, African finance ministers are now having to make impossible choices between paying the salaries of civil servants, keeping schools and hospitals open and servicing increasingly costly debt.

The current situation has serious implications for the region's stability and the wellbeing of its citizens. In the year after the pandemic began, 62mn people in Africa were pushed into poverty — by the end of 2022, approximately 18mn more had joined their ranks. Food and fuel inflation has hit families hard, as the cost of producing basic commodities has increased.

This is unfair. African countries have been buffeted by shocks that they did not create, yet they have limited involvement in the multilateral decisions that affect them. A succession of international moments in the past two years — G20 and G7 Summits, IMF and World Bank meetings — could have provided opportunities to change this dynamic but largely failed to do so.

There have been some welcome initiatives. Several countries have committed additional resources to the IMF's Poverty Reduction and Growth Facility (PRGT) and the Resilience and Sustainability Trust. World Bank members have agreed to leverage the bank's balance sheet more effectively to lend more funds.

But such commitments pale in comparison to the current need, which amounts to more than $1tn each year to address poverty and help create clean energy systems. African countries have seen the west take unprecedented steps to support Ukraine's banks, as well as to bolster their own economies. Meanwhile, Africa has been left to wait, fuelling frustration and anger. This must change.

There is an opportunity to alter this dynamic at next month's Summit for a New Global Financial Pact. The meeting, which France will host, will aim to increase finance for sustainable development alongside specific policy commitments to mobilise those funds. The summit should deliver three discrete but significant policy shifts.

> It has been buffeted by shocks it did not create, yet has limited involvement in multilateral decisions

First, African countries urgently require more liquidity. Advanced economies should pledge to increase their commitments to the PRGT. World Bank shareholders and management must present a plan of action to triple grants and loans to low- and middle-income countries. They should agree that the IMF special drawing rights — a reserve asset designed in the 1960s to support countries with liquidity challenges — can be used by multilateral development banks to leverage low-cost lending. The African Development Bank has presented a credible technical proposal to do this. With just $2.5bn in SDRs, the ADB could leverage $10bn in additional lending through its hybrid capital instrument.

Second, countries facing debt distress require effective, timely and transparent processes for debt restructuring. The G20's Common Framework for Debt Treatments was designed to do this, but in the two years since it was established, no restructuring has come about for Zambia and Ethiopia, while Chad came to a tentative conclusion at the end of 2022. The framework needs reforms, including an automatic standstill on debt service payments for those that apply and extended eligibility to middle-income countries. Only then can nations begin to rebuild, rather than being stuck in a repayment cycle.

Third, African countries must be given a meaningful voice in these critical discussions.

The entire African continent — with a population of over 1.4bn — does not have much more voting power at the IMF than Germany, which has a population of 84mn. While the current vote formula is largely based on members' relative economic size and financial position, the majority of the institution's operating costs are paid by developing countries through their interest payments on IMF loans. This system needs to be reformed, possibly by creating a new category that considers countries' vulnerability to external shocks.

A global financial system that is responsive and inclusive benefits everyone. If the world wants to avoid a lost decade for Africa, 2023 must be a year of action — starting with the Paris Summit for a New Global Financial Pact.

The author is chief economist and deputy executive secretary of the United Nations Economic Commission for Africa

Europe must not forget about the single market

Mario Monti

Competitiveness ministers of the EU are meeting to mark the 30th anniversary of the single market. They should be proud of having built the foundation on which the whole EU stands.

It is an irony that the benefits of such a successful project, whose parents were two British politicians (prime minister Margaret Thatcher and Commissioner Arthur Cockfield), would eventually be given up by the UK as part of Brexit. The Competitiveness Council should reflect on that precedent. The EU27 now risks losing the single market little by little as a consequence of the quest for "strategic autonomy" and economic security which, given geopolitical threats, are becoming overarching priorities.

Should "autonomy" or "security" be sought at the national level, even if that were to entail violations of EU rules? Or would such objectives be more easily achieved by joining forces? If so, the single market and certain common policies deserve higher priority than they currently receive.

French president Emmanuel Macron was right when he wrote recently: "What we need now is a comprehensive framework to implement this European consensus on sovereignty." He proposed a doctrine based on "five pillars". "The first pillar is the most obvious," he said. "A commitment to competitiveness, greater integration and the deepening of the EU single market, which is the first condition for creating European champions."

Macron went on to stress industrial policy, a traditional French concern. I believe that industrial policy, provided it is clearly formulated, can be important. And it is unlikely to be counterproductive as long as his first pillar is respected. But if it is not, the damage done to the single market would undermine the main source of European competitiveness.

> Should autonomy or security be sought at national level, even if it entails violating EU rules?

The European Commission will present a strategy for economic security in June, which should include a section specifically on upgrading the single market. Five issues, in particular, require urgent action in order to improve its depth and resilience.

First, it is astonishing that the tools the commission has at its disposal to address infringements of single market rules should be the same as they were 30 years ago. It should be possible to bring them into line with those which have been available for enforcing competition ever since the signing of the Treaty of Rome.

Second, progress is still needed to put the services sector, so crucial in terms of its contribution to gross domestic product, on a footing even vaguely comparable to other sectors of the economy.

Third, the extent of integration in the so-called banking and capital markets union is lamentable. This can often be attributed to a form of "soft" nationalism on the part of governments, regulators and national central banks.

Fourth, the seamlessness of the single market is still significantly impeded by inadequate interconnections in transport, energy and telecommunications. It is a pity that the huge investment effort made in the context of the Next Generation EU post-pandemic recovery fund has not been more focused on cross-border projects.

Finally, the current commission, under the leadership of Ursula von der Leyen, has been able to turn tragic challenges such as the pandemic or the war in Ukraine into opportunities for improved governance and greater acceptance of the commission's role.

However, one does not get the impression that comparable effort has been put into the less dramatic, but no less important, task of making the huge improvements to the single market that are needed. This is particularly crucial now that this established pillar of the EU stands alongside such fashionable new preoccupations as strategic autonomy and economic security.

The writer, an Italian senator for life, has been prime minister of Italy and EU commissioner for the single market and competition

Lex.

Twitter: @FTLex

Credit Suisse/AT1s: additional tears run

Bond disputes usually involve a bust-up between investors and company bosses. It is vanishingly rare for an issuer to side with disgruntled creditors. Credit Suisse nevertheless disputed the ill-judged decision of the Swiss authorities to wipe out its additional tier one securities.

Swiss officials wanted UBS to take over its rival. Waiving the requirement for equity to evaporate first saved the acquirer $17bn. That has imposed a heavier cost on Switzerland. It has hit the country's reputation for financial reliability and lumbered it with legal disputes that will drag on for years.

Unusually, EU and UK financial authorities have publicly criticised Swiss counterparts. Credit Suisse objected first, privately. It did so because at least 5,000 executives had $400mn of bonus awards reflecting the performance of the AT1s. The payouts have been cancelled. Along with a portion of AT1 holders, executives are planning to sue Swiss regulator Finma.

So-called contingent capital awards were popular with some Credit Suisse executives as, ironically, they appeared to offer more security. A semi-annual dividend provided a yearly yield of 8 per cent. The trade off was less potential for capital gains than more typical equity awards.

This latest dispute is further evidence of Finma's hastiness. The watchdog claims a "viability event" loomed, imperilling the nation's banking system. A threat to one of the nation's largest domestic banks could infect the whole system, it argues. This legal expropriation of AT1 capital was justified, in Finma's view, for the sake of national needs.

But in other cases — say, forcing the sale of private land for public needs — compensation is usually paid. AT1 holders have received none so far.

The chances of Credit Suisse bankers getting compensation from government coffers looks slim, at least from a political perspective. A history of reckless risk-taking by a subset of these executives was the reason clients began pulling deposits amid wider banking turmoil. However, the case undermines Switzerland's claims that its ability to upend capital hierarchies was well-known. Even financial professionals employed by the issuer thought AT1s were safer.

Regulators are meant to set rules and police them. Evidence is growing that Finma — under heavy pressure from politicians — did just the reverse.

Greenhill/Mizuho: legends of the fall

Management of Greenhill & Co liked to boast that its stock price hit an all-time high of nearly $100 per share in 2009 after the failures of Wall Street brutes such as Lehman Brothers and Bear Stearns. Unfortunately, others had also noted a changing of the guard.

In the following decade, several Greenhill copycats emerged while the boutique investment bank restrained its growth. Amid a 2010s deals boom, that caution proved mistaken. Yesterday, Greenhill's independence ended after 27 years as it announced its sale to Japan's Mizuho Financial Group for an enterprise value of $550mn

Greenhill's listing in 2004 was a watershed event. Lazard, Evercore, Moelis, Houlihan Lokey and Perella Weinberg would follow. Those IPOs enabled founders to realise fortunes.

But Greenhill's desultory conclusion shows the shortcomings of a publicly traded model for an enterprise ultimately driven by a handful of superstars. In a hyper-competitive and cyclical market, its shares made a poor investment for mutual funds.

Deal fees are paid typically as a percentage of the dollar value of transactions. The fee pool should commensurately grow as share prices climb. But equity value appreciation is erratic and any deal adviser can quickly lose its market position.

In 2007, Greenhill recorded annual revenue of $400mn when the S&P 500 was about 1,500. Today the index is above 4,000. Yet Greenhill never again exceeded $330mn in annual revenue.

As a private business, generating $200mn-$300mn would pay bankers well. But that hardly works when public investors seek constant growth.

Other rivals like Evercore and Moelis expanded, profitably adding new business lines and bankers. They may, yet, hit their own ceilings and sell out to larger institutions. Maintaining Greenhill's uniqueness will pose an tricky challenge for Mizuho. As the financial crisis showed, even the most storied brands on Wall Street have no unalienable right to avoid reckonings.

China/Micron: duel nationalities

Shares in Micron Technology have traded in parallel with South Korean peers Samsung Electronics and SK Hynix. Restrictions on the Idaho-based chip group's China sales will be awkward for Chinese customers, who make a useful contribution to revenues.

Micron and South Korean chipmakers trade in parallel

Share prices (rebased)

Sources: S&P CIQ; Statista; chyxx.com

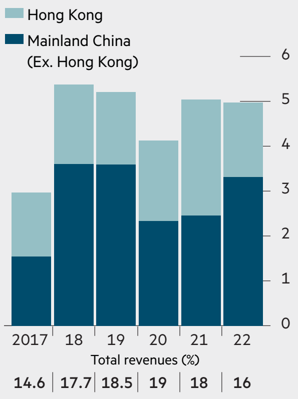
China's chip trade deficit has grown

$bn

Source: China Customs, 2014 to 2021

China matters to Micron

Revenues ($bn)



Sources: S&P CIQ; FT analysis

Touché! The tech battle between the US and China continues at the leaden pace of two heavily armoured knights biffing each other with yard brooms.

China has banned its big infrastructure operators from buying the memory chips of America's Micron Technology. It is retaliating against expansive sector controls introduced by the US last year.

The US is aiming to slow China's technological progress. Beijing's latest tit-for-tat move may have the same effect.

On the face of it, the ban is a big deal for Micron. Mainland China generated about a tenth of its sales for the 2022 fiscal year. Beijing said on Sunday that Micron's products "pose significant security risks to China's critical information infrastructure".

Beijing's wording suggests the ban would mostly be limited to telecoms and transportation. Micron's chips are not widely used in these sectors in China. Instead, they are mostly deployed in mobile devices and consumer electronics.

Moreover, Micron has successfully diversified its sources of income. Its computer and networking business, which makes products used in cloud servers, enterprise and networks, accounts for more than half of its operating income, significantly outpacing earnings from consumer electronics.

That should shield Micron if Beijing decides to tighten curbs to include electronic devices as well as infrastructure.

For Chinese clients of Micron, though, such a ban would mean less price competition. That risk would explain a rise in Chinese memory chipmakers' stocks yesterday. It also explains larger declines in the shares of Micron's Chinese clients, including flash-memory device manufacturer Shenzhen Longsys Electronics, whose shares fell 4 per cent.

China's dominance in a wide range of industries such as electric-car batteries and materials means it has the ability to leave lasting damage through trade retaliation.

But when it comes to chips, its high dependence on the US means it has little leverage.

US/UK legal merger: lien on me

Big law firm mergers typically have the ominous air of a marriage of convenience. Despite declarations of commitment, the sense may be that both sides would rather be somewhere else with someone else.

Shearman & Sterling of the US and Allen & Overy, a UK "Magic Circle" firm, plan to link, creating one of the world's largest legal firms, with more than $3bn in annual revenue based on 2022 results. Formidable though that sounds, defensive drivers may be at work. In 2022, revenue at Shearman fell 10 per cent to $900mn. Net profits dropped around a third, according to American Lawyer magazine.

Other law firms and professional services outfits have registered similar declines owing to a slump in M&A after a record 2021. Fast-evolving artificial intelligence and machine learning may meanwhile shake up the industry.

Shearman's cachet has been slipping for years. The firm historically advised Wall Street banks. But the financial crisis diminished these incumbents; private capital firms seized a more central role. Shearman and other legal mainstays have struggled to adapt.

Law firms are rarely agile. Shearman had long been searching for a suitor, recently holding talks with Anglo-American law firm Hogan Lovells.

A&O is hoping Shearman can be a beachhead into the lucrative US legal market. The combined business would aim to operate seamlessly around the world for multinationals. Law firms, however, typically prefer to grow by picking off small, specialised teams. Integrating whole firms is often messy. The best lawyers can simply choose to decamp elsewhere to avoid fallout.

Each firm's partners must approve the deal for it to proceed. The perils of such collective decision-making has been highlighted by EY's abortive plan to split auditing and consulting.

But Shearman and A&O may need each other so much that they may plough ahead. Making their marriage work may be the price of remaining relevant for both groups of partners.

EU/Meta: data mine

Here is a status update Facebook did not want to post. The EU has fined its parent company, Meta, €1.2bn for breaching data protection laws.

The bloc ruled that Meta's legal basis for transferring data harvested in the EU to the US does not hold water. It must end the practice pronto.

Meta is unlikely to attract much sympathy following the ruling. Data protection is a vital issue. It is one that Facebook users — bombarded by targeted ads — have grown increasingly concerned about. Governments the world over fear foreign institutions' use of their citizens' data.

While the Meta fine is a record for the EU, it is only about a quarter of the maximum possible levy, according to London law firm Fladgate. It is also small beer in the context of Meta's $630bn market capitalisation.

That said, Meta does seem to be the victim of inconsistencies in cross-border policy. European GDPR laws are stricter than US rules. In particular, the US makes it easier for law enforcement agencies to gain access to data, and harder for consumers to seek redress. It is a longstanding issue.

US companies have struggled to find a legal way to transfer their European clients' data back home.

Companies have so far relied on standardised contractual clauses — agreements between their European and US entities — to protect data. The EU's Meta ruling makes it clear that these SCCs alone will not stick.

As Meta prepares its appeal, other groups will look at how they might be affected. Other tech giants risk getting caught in regulators' crosshairs. They will hope that the EU and US quickly implement a deal to align data protection laws. One has already been agreed, in broad terms, and should come into force in the coming months.

The fact the EU's data protection body chose to crack the whip in the first place is useful information for big tech companies. It shows that the continent's regulators are still giving them a resounding thumbs-down.

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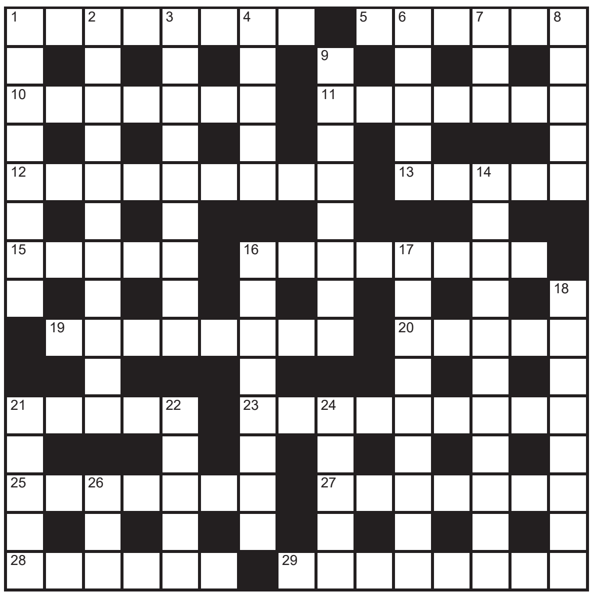

ACROSS

1 One famous for arranging butcher's cut (8)
5 Southern state to the east of Italy and Sicily? (6)
10 Petition started by small perfume salesman, say (7)
11 Chap pulling a blade and raising a ransom (7)
12 Openings on boards you can see in houses? (9)
13 American prison guards start on rowdy heavy (5)
15 Turn over page in Ulysses primarily with purpose (5)
16 Surgery that doctor leads so breathtakingly (4-4)
19 A habit seen next to black and blue top (4,4)
20 In absentia, raffle half-a-crown? (5)
21 One must leave country hotel to get plonk (5)
23 Wide-ranging broadcast Marconi sent by tannoy (9)
25 What a Windsor might overlook in dock after 'relationship' (3,4)
27 Clown that might get a Brighton landmark condemned? (7)
28 Parties going on longer than usual can be crap (3-3)
29 All of it goes up with large load of lighters, say (8)

DOWN

1 Greek who had an up-and-down affair with Rolling Stone? (8)
2 I might push heroin or I might trade in Colts (5-6)
3 Howl with flatus that hurts, perhaps someone could look into it? (3,6)
4 More bloody war ... are Russians demonstrating? (5)
6 Usual small drinks tenor served up for band (5)
7 What might play a large role in injury? (3)
8 Crusoe's creator, so his pal says, is a fop (5)
9 One likely to go and fetch an Afghan's trunk? (8)
14 Officer, engineer, ram-raider, gangster! (4,7)
16 Sad star on ecstasy one's seen in the gutter (8)
17 Cleaner pants regent puts on detective (9)
18 Dieter possibly heard on radio in an Indian city (8)
21 It ultimately got my boss fed up, you might say (5)
22 Is anyone here suffering getting old? (5)
24 Nurse knocking back Bud in an Asian place (5)
26 I like oxygen (3)

JOTTER PAD

Solution 17,421

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